

**ESPON**



Co-funded by  
the European Union  
Interreg

**EUROPEAN RESEARCH PROJECT //**

# Collecting and analysing data for the post-27 INTERREG (Core-IB)

Germany-Austria-Switzerland-Liechtenstein

**Border profile**

March 2026



This European Research Project is conducted within the framework of the ESPON 2030 Cooperation Programme, partly financed by the European Regional Development Fund.

The ESPON EGTC is the Single Beneficiary of the ESPON 2030 Cooperation Programme. The Single Operation within the programme is implemented by the ESPON EGTC and co-financed by the European Regional Development Fund, the EU Member States and the Partner States, Iceland, Liechtenstein, Norway and Switzerland.

This delivery does not necessarily reflect the opinions of members of the ESPON 2030 Monitoring Committee.

#### **Coordination**

Andreea China, Laura Dimitriu, Martin Gauk, Nikos Lampropoulos, Nicolas Rossignol – ESPON EGTC

#### **Lead authors**

Tobias Chilla, Dominik Bertram, Elias Günther, Stefan Hippe – Friedrich-Alexander University Erlangen-Nürnberg

Irene McMaster, Heidi Vironen, Neli Georgieva, Stefan Kah, Virginia Arena – Stichting EPRC Strathclyde University

Roland Gaugitsch, Sabrina Mansutti, Helene Gorny, Michelle Wiest, Erich Dallhammer, Cristian Andronic, Manon Badoux, Chien-Hui Hsiung, Robert Badea – ÖIR GmbH

Vít Pászto, Radek Barvíř, Karel Macků, Jaroslav Burian, Zdena Dobešová, Oldřich Bittner – Palacký University Olomouc

#### **Steering Committee**

Jean-Pierre Halkin, Gaëlle Doleans, Simona Pohlová, Maria Sioliou, Robert Spisiak – Unit D2 Interreg, Cross-Border Cooperation, Internal Borders, Directorate-General for Regional and Urban Policy, European Commission (EC-DG Regio)

Milada Hronkova – Ministry of Regional Development, Department of European Territorial Cooperation (CZ)

Josiane Meier - Federal Ministry for Housing, Urban Development and Building, Division Spatial Planning, Spatial Planning Law and European Spatial Development Policy BMWWSB (DE)

Margarita Golovko – Ministry of Regional Affairs and Agriculture (EE)

Olivier Bichel, Sébastien Keiffer– Ministry of Housing and Spatial Planning, Department of Spatial Planning (LU)

#### **Acknowledgements**

We gratefully acknowledge the support and constructive feedback received during the project implementation, from the ESPON Monitoring Committee members, INTERREG programme Managing Authorities/Joint Secretariats, Ministries and DG Regio desk officers. The insightful comments and recommendations provided have been instrumental in enhancing the quality, coherence, and robustness of the analysis.

#### **Information on ESPON and its projects can be found at [www.espon.eu](http://www.espon.eu).**

The website provides the possibility to download and examine the most recent documents produced by finalised and ongoing ESPON projects.

#### **© ESPON 2030**

ISBN: 978-2-919816-91-0

Layout and graphic design by BGRAPHIC, Denmark

Printing, reproduction or quotation is authorised provided the source is acknowledged and a copy is forwarded to the ESPON EGTC in Luxembourg.

Contact: [info@espon.eu](mailto:info@espon.eu)

**ESPON**



Co-funded by  
the European Union  
Interreg

**EUROPEAN RESEARCH PROJECT //**

# **Collecting and analysing data for the post-27 INTERREG (Core-IB)**

Germany-Austria-Switzerland-Liechtenstein

**Border profile**

March 2026

## **Disclaimer**

This document is a final report.

The information contained herein is subject to change and does not commit the ESPON EGTC and the countries participating in the ESPON 2030 Cooperation Programme.

# Table of contents

<b>1</b>	<b>Introduction .....</b>	<b>8</b>
1.1	Context and objective of the border profile .....	8
1.2	Presentation of the border area .....	9
<b>2</b>	<b>Cross-border analysis .....</b>	<b>12</b>
2.1	Territorial dimension .....	12
2.1.1	Population and settlements .....	12
2.1.2	Accessibility of the border area .....	17
2.1.3	Key messages on the territorial dimension .....	22
2.2	Economic dimension .....	23
2.2.1	Gross Domestic Product .....	23
2.2.2	Labour market and commuting .....	25
2.2.3	Competitiveness .....	33
2.2.4	Infrastructure and housing .....	37
2.2.5	Key messages on the economic dimension .....	41
2.3	Green dimension .....	41
2.3.1	Nature protection and pollution .....	41
2.3.2	Climate risks and resilience .....	47
2.3.3	(Renewable) Energy and energy infrastructure .....	49
2.3.4	Resources and circular economy .....	53
2.3.5	Key messages on the green dimension .....	55
2.4	Socio-economic dimension .....	56
2.4.1	Social integration .....	56
2.4.2	Tourism .....	58
2.4.3	Services of general interest .....	61
2.4.4	Key messages on the socio-economic dimension .....	67
2.5	Border security and safety .....	68
2.5.1	Temporary reintroduction of border controls at internal borders .....	68
2.5.2	Key messages on the border security dimension .....	70
2.6	Governance dimension .....	71
2.6.1	Cross-border cooperation .....	71
2.6.2	Outline of Interreg activities .....	78
2.6.3	Key messages on the governance dimension .....	81
<b>3</b>	<b>Summary and key observations .....</b>	<b>83</b>

## List of figures

Figure 1.1:	Overview map .....	9
Figure 1.2:	Geographical features and characteristics .....	10
Figure 2.1:	Spatial patterns of population distribution.....	13
Figure 2.2:	Population development (2014=100) .....	14
Figure 2.3:	Settlement area dynamics .....	16
Figure 2.4:	Change in settlement areas (2012-2018) (comparison).....	17
Figure 2.5:	Comparative quality of selected cross-border connections.....	18
Figure 2.6:	Cross-border mobility intensity.....	20
Figure 2.7:	Travel-time accessibility from border crossings.....	22
Figure 2.8:	Gross domestic product at current market prices (per capita).....	24
Figure 2.9:	Employment share .....	26
Figure 2.10:	Employment share over time (comparison) .....	27
Figure 2.11:	Share of working-age population over time (comparison).....	28
Figure 2.12:	Employment by sector (comparison).....	30
Figure 2.13:	Outgoing cross-border commuting patterns.....	32
Figure 2.14:	Gross value added at basic prices by sector (comparison) .....	34
Figure 2.15:	Average income per hour .....	36
Figure 2.16:	Advertised housing prices .....	38
Figure 2.17:	Advertised housing prices (comparison).....	39
Figure 2.18:	Average internet download speed.....	40
Figure 2.19:	Nature protected areas.....	43
Figure 2.20:	Air pollution.....	44
Figure 2.21:	Water quality patterns .....	46
Figure 2.22:	Natural hazard risks .....	48
Figure 2.23:	High-voltage transmission infrastructure .....	50
Figure 2.24:	Power stations infrastructure.....	52
Figure 2.25:	Resource productivity .....	53
Figure 2.26:	Waste generation per GDP .....	54
Figure 2.27:	Cross-border connectivity in social media .....	57
Figure 2.28:	Overnight stays in tourism .....	59
Figure 2.29:	Overnights stays in tourism (comparison).....	60
Figure 2.30:	Travel time to secondary schools .....	62
Figure 2.31:	Travel time to grocery shops.....	63
Figure 2.32:	Travel time to hospitals.....	64
Figure 2.33:	Travel time to doctors.....	65
Figure 2.34:	Travel time to pharmacies .....	66
Figure 2.35:	Travel time to cinemas .....	67
Figure 2.36:	Temporary reintroduction of border controls.....	69
Figure 2.37:	Cross-border governance structures.....	72
Figure 2.38:	Cross-border public services.....	74
Figure 2.39:	Institutionalised cross-border advice centres .....	76
Figure 2.40:	Split of Interreg allocation .....	79
Figure 2.41:	Interreg V-A partner network density.....	81

## List of tables

Table 1: Number and type of power stations .....	51
Table 2: Interreg VI (2021-2027): Opportunities and challenges.....	78
Table 3: Shared geographies with other cross-border and transnational programmes.....	79
Table 4: Evidence-based conclusions.....	83

# 1 Introduction

## 1.1 Context and objective of the border profile

The ESPON Core-IB project (Collecting and analysing data for the post-27 INTERREG) provides evidence-based, non-binding analytical work to support the next generation of Interreg programmes post-2027. By collecting and analysing harmonised territorial data, the project highlights key socio-economic characteristics, cross-border interactions, and governance structures. Its spatial focus covers 48 cross-border cooperation areas (40 land and 8 maritime), including all EU internal border regions and those bordering Liechtenstein, Switzerland, and Norway. The findings are analytical and informative; they do not create regulatory or policy obligations for Member States, the European Commission, or programme authorities. Each border profile serves as a comparable knowledge base for policymakers at EU, national, and regional levels, supporting dialogue and reflection rather than prescribing policy choices. The profiles aim to provide consistent, data-driven territorial evidence that can inform strategic discussions about future cross-border cooperation and contribute to the preparation of Interreg programmes post-2027.

The Core-IB border profiles are designed to support the upcoming steps in the Interreg programming process with analyses based on data that is available at the European scale, including ESPON, Eurostat, DG REGIO, JRC, and Interreg databases. Their main purpose is to ensure comparability of data analyses and to provide programme areas with access to recent harmonised data at high geographical resolution (NUTS3 level or finer). Member States may hold additional or more detailed data which can further enrich or contextualise the findings beyond the Core-IB project. These national sources are essential for refining and validating territorial evidence in policymaking processes, including additional regional, fine-scale information and insights from political processes related to prioritisation and objective setting. All border profiles follow a systematic and methodologically robust approach. They provide territorial evidence, structured along 6 thematic dimensions, offering insights into the geographic, economic, environmental, socio-economic, border security and governance characteristics of the border region. Quantitative data and qualitative analyses are combined to ensure meaningful insights into all 48 border areas. Due to methodological constraints and limited resources, local studies and national datasets falling outside the European data framework could not be included. Visualisations, such as maps and charts based on descriptive statistics, facilitate understanding and support evidence-based policymaking. The profiles analyse the border region as a whole at NUTS3 (2021) level (corresponding to the current Interreg VI-A programme area)<sup>1</sup> and position it within a broader European context. For comparative purposes, several reference categories are applied:

- › European averages (EU27 + Norway, Switzerland and Liechtenstein, depending on data availability)
- › National averages
- › National border region averages
- › Aggregated border region averages

To complement the quantitative evidence, the profiles also draw on strategic and qualitative sources, including:

- › Strategic documents from the Interreg Programme 2021-2027
- › Border Orientation Papers from the 2021-2027 programming period
- › Information from the keep.eu database on cross-border cooperation activities
- › Information from the Cohesion Open Data platform
- › Information from the b-solutions initiative
- › Information from recent ESPON Projects (i.e., CROSSGOV, House4All, PROFECY Update, CPS 2.0)

<sup>1</sup> As defined by Annex 1, Commission Implementing Decision (EU) 2022/74 of 17 January 2022, as amended by Commission Implementing Decision (EU) 2023/1638 of 14 August 2023 (OJ L204, 17.8.2023, p. 9): [https://eur-lex.europa.eu/eli/dec\\_impl/2022/75/oj/eng](https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng)

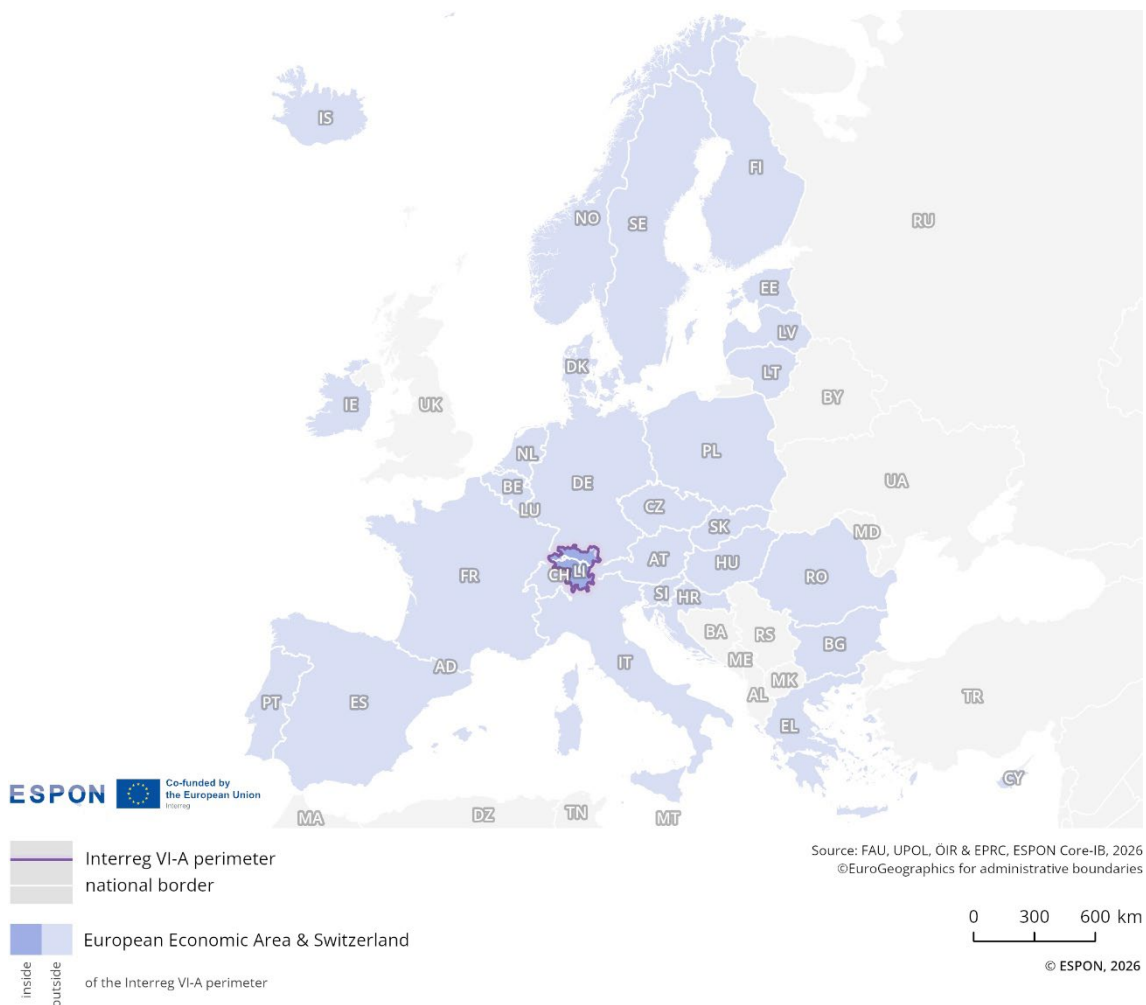
Within the ESPON framework, the CROSSGOV project (Governance mechanisms for cross-border functional areas) has been implemented in parallel to Core-IB. The CROSSGOV hub<sup>2</sup> provides a comprehensive platform for interactive data exploration, and selected data have been incorporated into this study.

Additional project-related information can be explored separately in the Core-IB **Final Report**. Further technical information on this border profile can be found in a separate **Technical Annex** providing an overview of data and methods.

## 1.2 Presentation of the border area

The Interreg VI-A border region ‘Alpenrhein-Bodensee-Hochrhein’ covers the area between south-western Germany, western Austria, eastern Switzerland, and Liechtenstein (see Figure 1.1).

**Figure 1.1: Overview map**

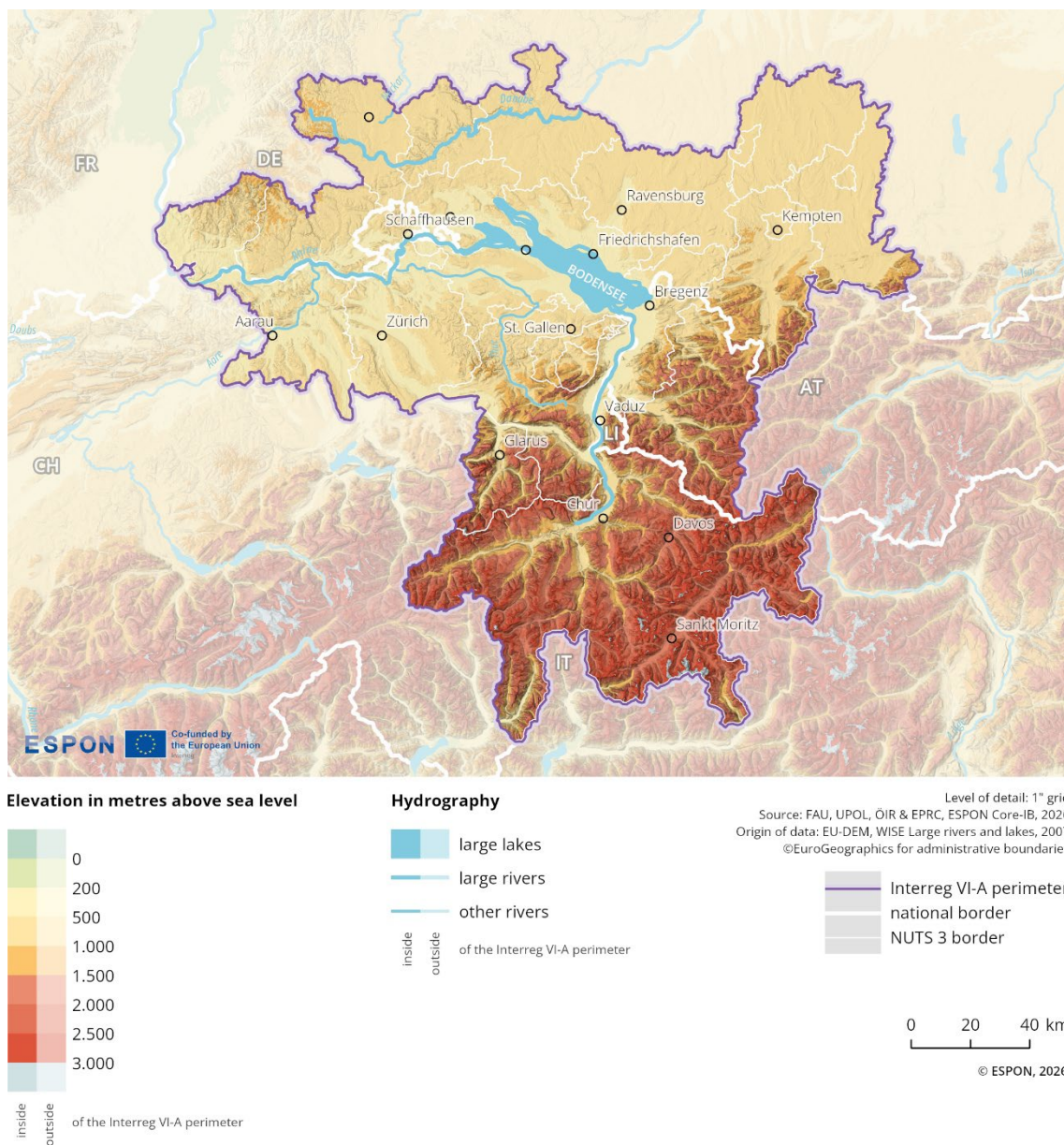


In Germany, the programme area includes most of the regions of Tübingen, Swabia, and Freiburg in the federal states of Baden-Württemberg and Bavaria, comprising a total of 15 NUTS3 regions. In Austria, it covers the federal state of Vorarlberg in western Austria, encompassing a total of 2 NUTS3 regions. In Switzerland, the programme area includes all cantons of Eastern Switzerland, Aargau and Zürich, comprising a total of 9 NUTS3 regions. The area includes Liechtenstein in its entirety.

<sup>2</sup> ESPON CROSSGOV Hub: <https://gis-portal.espon.eu/arcgis/apps/experiencebuilder/experience/?id=27e3b86ef44441b08793a22239c370607>

Figure 1.2 illustrates the region's geomorphological features and the perimeter of the current Interreg VI A programme area. Spanning approximately 30,080 km<sup>2</sup>, the border region is highly heterogeneous. It comprises the area between Germany, Austria, Liechtenstein and Switzerland, with Lake Constance (Bodensee) at its centre. The national borders are predominantly formed by natural features, such as the Rätikon mountain range to the east, the Rhine River in the Rhine Valley and along the Upper Rhine, and Lake Constance.

**Figure 1.2: Geographical features and characteristics<sup>3</sup>**



Key towns and cities in the programme area include Zürich, St. Gallen, Chur, Bregenz, Vaduz, Friedrichshafen, Konstanz, Singen and Kreuzlingen. To the south, the border follows Alpine terrain, with the Alpine Rhine Valley forming a major longitudinal axis that connects the Alpine foothills with the higher Alpine massifs. The region includes sections of the Northern, Pre-, and Appenzell Alps and

<sup>3</sup> The selection of displayed settlements is based on factors such as size, administrative or cultural importance, transport links, regional coverage and cartographic clarity. This is part of a standard cartographic generalisation process with no pre-set thresholds, and the main aim is to provide orientation.

features significant elevation differences within short distances, ranging from lowland river valleys to alpine peaks over 2,500 metres high.

In addition to Lake Constance, numerous smaller lakes and Alpine rivers create a network of waterbodies and -ways. Glacially shaped valleys, steep slopes, karst formations and periglacial landscapes are also prevalent. The Upper Rhine, flowing westward from Lake Constance, forms another central axis and a distinct geomorphological corridor.

The landscape comprises a combination of urbanised areas, agricultural land, and alpine pastures and forests, reflecting the interplay of natural constraints and human land use.

## 2 Cross-border analysis

### 2.1 Territorial dimension

The territorial dimension refers to the spatial characteristics and dynamics of a border region. It specifically depicts how factors such as population density, demographic trends, changes in settlement areas and accessibility influence and reflect cross-border integration.

#### 2.1.1 Population and settlements

This sub-dimension illustrates the population characteristics and land use dynamics of the border region, based on analysed indicators. It examines population density, population development by age groups, and changes in settlement areas. The analysis highlights whether the border functions as a catalyst for integration or as a barrier. Comparisons with the respective countries and the EU average provide context for understanding the region's dynamics.

##### 2.1.1.1 Population density

###### Indicator description

Population density refers to the number of residents per km<sup>2</sup>. This indicator shows the number of inhabitants per square kilometre in a 1x1 km grid. It therefore provides information on the distribution and concentration of population across the region and allows to identify agglomerations of high density. In particular agglomerations at or close to the border area of key interest.

- **Source:** Eurostat
- **Temporal coverage:** 2021
- **Unit:** Inhabitants/km<sup>2</sup>

Please refer to the technical annex for more information.

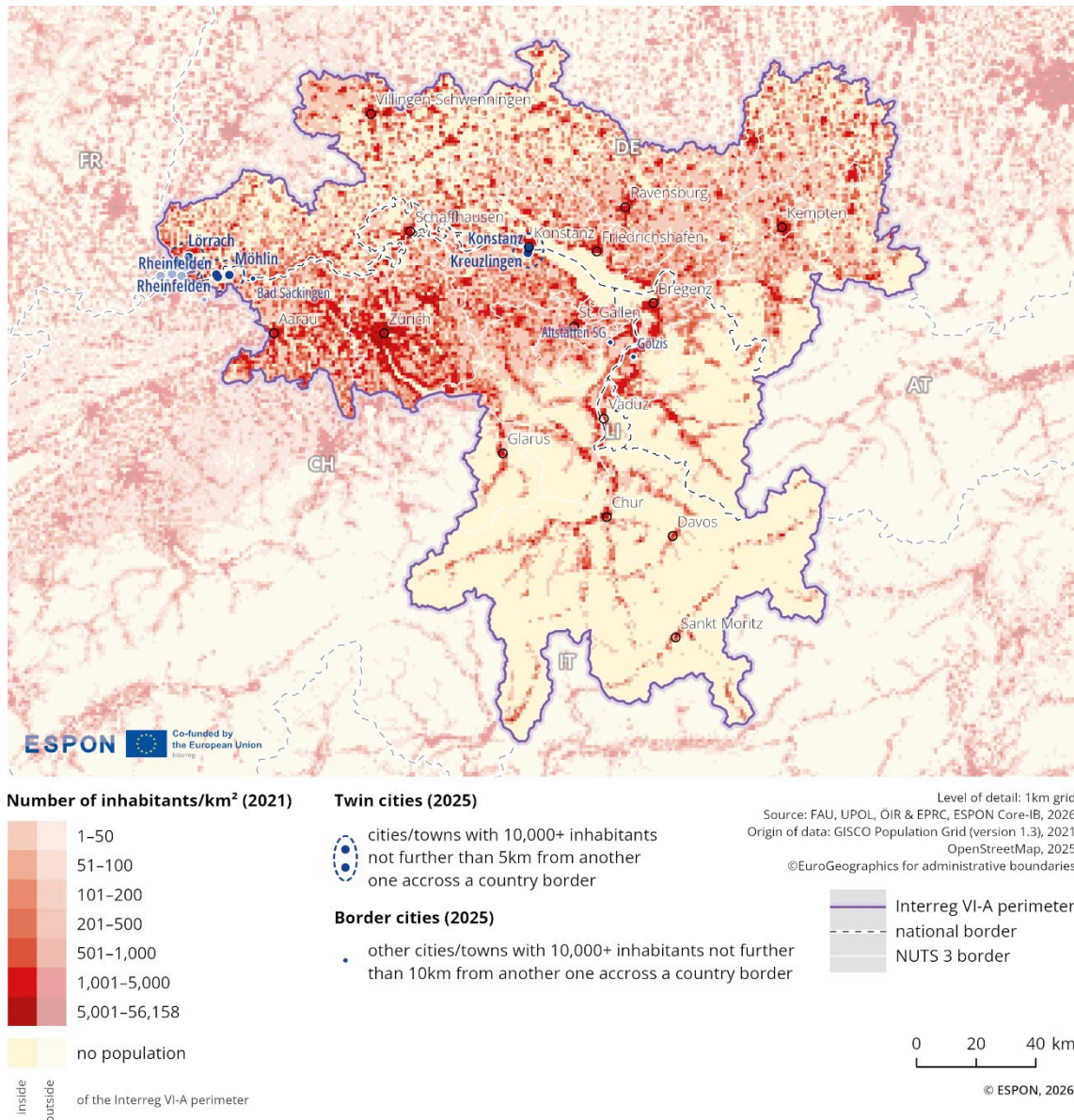
The border region comprises 21 urban centres with a population exceeding 30,000 inhabitants (see Figure 2.1). The highest population density is in Zürich (1.455,000), followed by Konstanz (87,000), Kempten and Ravensburg. The northern part of Germany has a more even population density with smaller fluctuations in density. Switzerland has a higher and more continuous population density in its northern part. In contrast, the southern part has very low population densities or is completely unpopulated, with the population mainly located in the mountain valleys of the Alps. Similar to the southern part of Switzerland, there is also an area in Austria with a low population density, except for the region near the Swiss border.

The average population density across the entire border region is 201 inhabitants per square kilometre, which exceeds both the EU average of 109 inhabitants per square kilometre (according to Eurostat) and the aggregated average of all EU-evaluated border regions (125 inhabitants per square kilometre).

Within the border region, the Austrian part records an average population density of approximately 149 inhabitants per square kilometre, exceeding the national average in Austria (106 inhabitants per square kilometre). In contrast, the German part shows an average population density of around 179 inhabitants per square kilometre, which is lower than the national average in Germany (231 inhabitants per square kilometre).

The Swiss part of the border region has an average population density of approximately 233 inhabitants per square kilometre, exceeding the national average in Switzerland (211 inhabitants per square kilometre). Similarly, the Liechtenstein part records an average population density of around 231 inhabitants per square kilometre, corresponding to the national average, as the entire territory of Liechtenstein is encompassed within the border region.

**Figure 2.1: Spatial patterns of population distribution**



### 2.1.1.2 Population development (by age groups)

#### Indicator description

Population development refers to the percentage change in population at regional level between 2014 and 2024. The data reflects on the total population, as well as on the age groups 0-14, 15-64 and 65+.

- **Source:** Annual Regional Database of the European Commission (ARDECO)
- **Temporal coverage:** 2014-2024
- **Unit:** Change in %

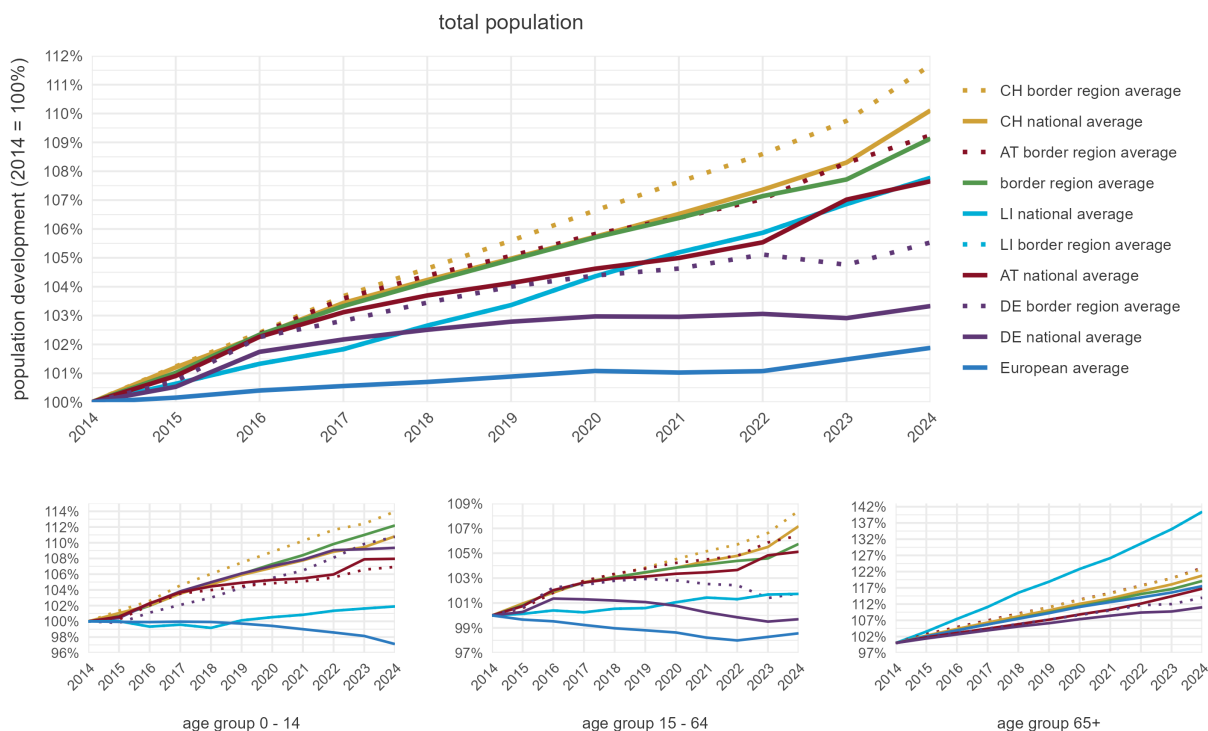
Please refer to the technical annex for more information.

Population in the Germany–Austria–Switzerland–Liechtenstein (Alpenrhein–Bodensee–Hochrhein) region in 2024 (Eurostat): 6.4 million inhabitants, of which:

- › 37.2% in the German border territory (2.4 million inhabitants)
- › 6.4% in the Austrian border territory (0.41 million inhabitants)
- › 55.8% in the Swiss border territory (3.6 million inhabitants)
- › 0.6% in the Liechtenstein territory (0.04 million inhabitants)
- › Region within the border region with the highest population increase since 2014: Aargau (CH033) at 14.2%

Figure 2.2 shows the population growth in the Germany–Austria–Switzerland–Liechtenstein (Alpenrhein–Bodensee–Hochrhein) region between 2014 and 2024. During this period, the region has experienced substantial growth of 9.1%, with the highest growth rate observed in the Swiss part.

**Figure 2.2: Population development (2014=100)**



Population growth across the border region is substantially above the European average (9.1% vs. 1.9%) and also substantially higher than the average development in all border regions (9.1% vs 1.5%). While the German border area shows slightly higher growth than the national average (5.5% vs. 3.3%), the Austrian and Liechtenstein border areas show similar growth to their national averages (9.2% vs. 7.7% in Austria; 7.8% in Liechtenstein). The Swiss border area shows slightly higher growth than the national average (11.7% vs. 10.1%).

In terms of the development of individual age groups in the region, the population aged 0–14 experienced a notable increase of 8.4%, while the working-age population (15–64) showed a slight increase of 2.6%. The population aged 65 and over underwent a substantial increase of 16.6%.

### 2.1.1.3 Change in settlement areas

#### Indicator description

The indicator shows the relative change in settlement areas per LAU in the border region. It considers changes in land cover, from non-artificial areas (such as agricultural, forest and seminatural areas, wetlands and water bodies) to artificial areas (such as urban, industrial, construction sites) between 2012 and 2018. This indicator has to be viewed alongside population development in particular.

- **Source/method of retrieval:** The indicator is retrieved via processing of raster data from CORINE Land cover. The raster information is crossed with Local Administrative Units (LAU) to calculate a change in %.
- **Temporal coverage:** 2012-2018
- **Unit:** Change in %

Please refer to the technical annex for more information.

Figure 2.3 illustrates the change in settlement areas at municipal level between 2012 and 2018. Overall, the map shows mostly similar patterns of change in settlement areas on all sides of the German-Austrian-Swiss-Liechtenstein border. Changes are evident in particular around the urban centres of Ravensburg, Kempten, Zürich and Vaduz. Konstanz, Schaffhausen, Aarau, Glarus, Davos and Sankt Moritz show no significant changes during the observed time period. High growth in settlement areas is particularly evident on the German side in Villingen-Schwenningen and between Ravensburg and Kempten as well as in Switzerland around Zürich. In close proximity to the national borders, the settlement area increases mainly on the Austrian border to Liechtenstein as well as in the axis between Zürich and Konstanz towards the German-Swiss border. On the German side the increase shows along the Swiss border. The map also reflects the topographical characteristics of the border region, with hardly any changes in settlement areas visible in steep, high-altitude mountainous areas.

**Figure 2.3: Settlement area dynamics**

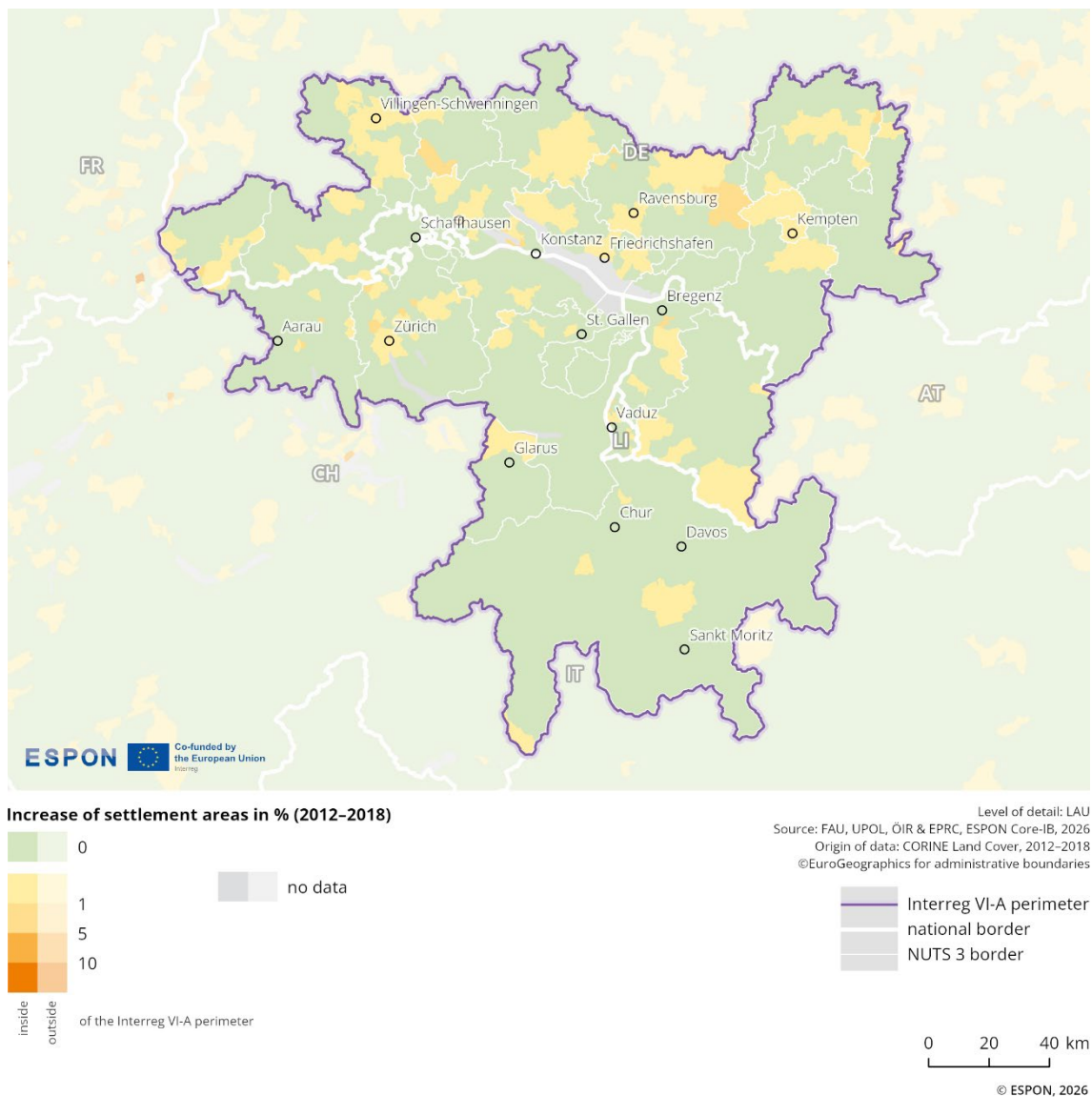
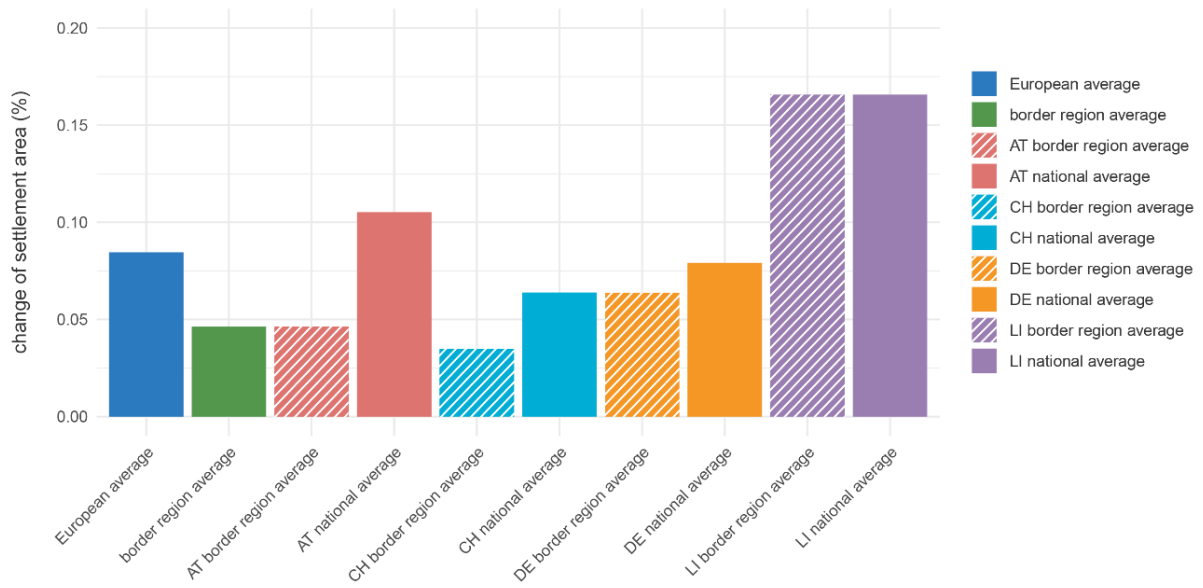


Figure 2.4 presents the change in settlement areas from a comparative perspective. The average for the Germany-Austria-Switzerland-Liechtenstein (Alpenrhein-Bodensee-Hochrhein) programme area is lower than the overall European average, which includes both EU member states and the EFTA (European Free Trade Association) countries Switzerland, Liechtenstein, and Norway. The national Liechtenstein value is the highest, followed by the Austrian national value, and finally the German and Swiss national values. The Liechtenstein border-regional average lies above the German and Austrian border-regional averages. The Swiss border-regional average lies below the Liechtenstein, German and Austrian regional-border averages. The Liechtenstein border-regional average is similar to the national average, whereas the Swiss, German and Austrian border-regional averages lie below the national averages.

In general, the programme area shows a dynamic settlement development. The need for an integrated approach to spatial development is obvious. Spatial development in this border region has to balance the various demands on land use (e.g., housing, commercial, tourism, mobility/transport, agriculture, and nature conservation), and this requires ongoing coordination and exchange, also across the border.

**Figure 2.4: Change in settlement areas (2012-2018) (comparison)**



## 2.1.2 Accessibility of the border area

This sub-dimension illustrates the functional travel connections that already exist in the border region. It examines average cross-border travel times for different modes of transport and cross-border catchment areas based on mobility flows. It also considers travel times to and from border crossings. The analysis shows whether mobility flows are integrated between border regions or if the border hampers mobility.

### 2.1.2.1 Comparative quality of selected cross-border connections

#### Indicator description

The indicator presents a comparative perspective for different modes of transport (public and private) and their average travel speed (so-called space-time-lines). As such it helps to understand and interpret accessibility patterns along the border and highlights the comparative quality of selected cross-border connections.

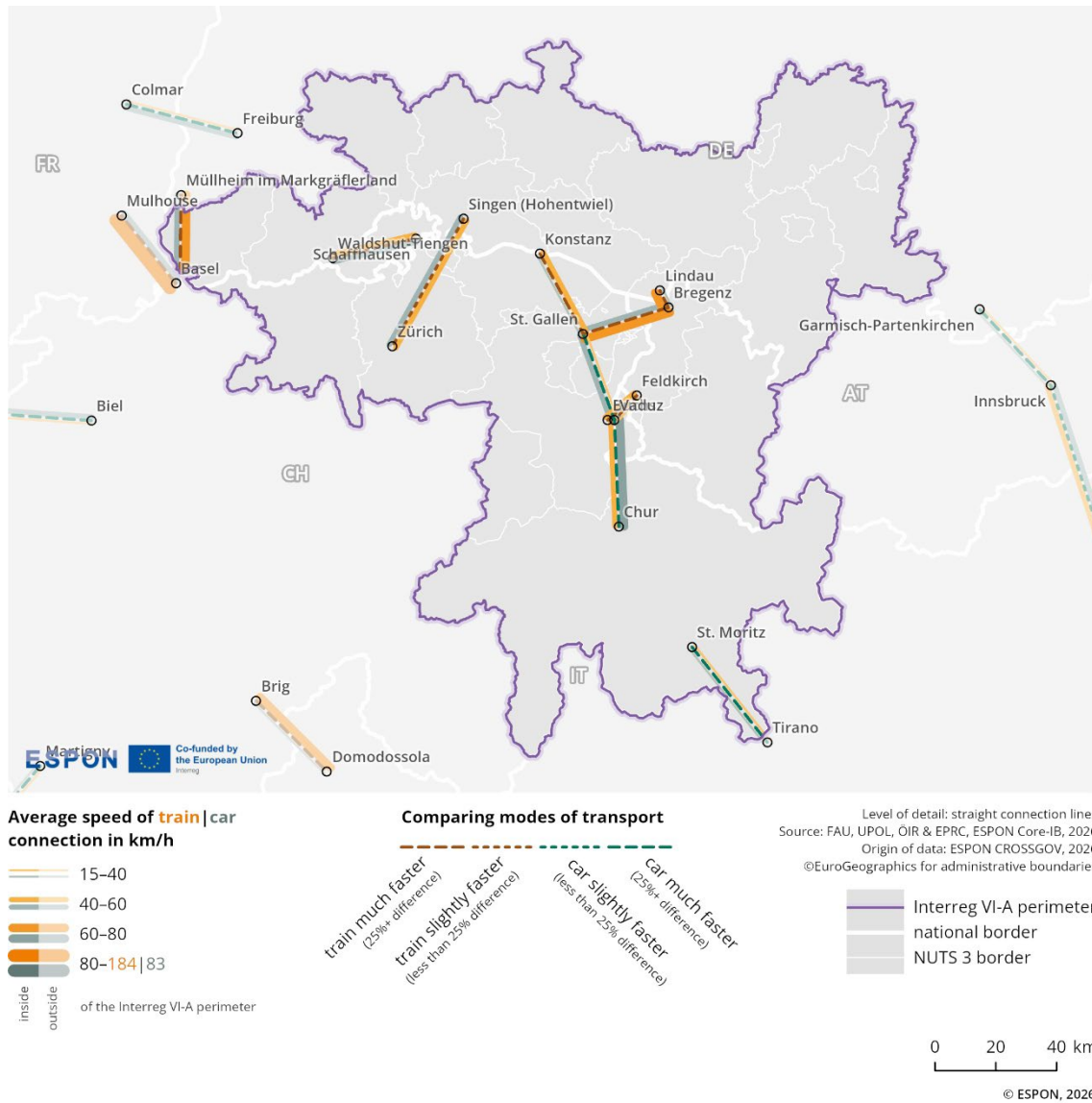
- **Source/method of retrieval:** Average number and speed of rail connections/ferries, average speed of car connections between selected cities and towns in border regions using Rail Travel Sites, Google Maps, luftlinie.org, Direct Ferries, local ferry companies
- **Temporal coverage:** 2025 (first quarter)
- **Unit:** km/h

Please refer to the technical annex for more information.

Cross-border accessibility shapes cross-border interactions. Figure 2.5 illustrates this using a "space-time-line" map, which shows parts of a European overview of car and train travel times in the Germany-Austria-Switzerland-Liechtenstein (Alpenrhein-Bodensee-Hochrhein) border region. This visualisation

enables an assessment of transport quality by highlighting differences between public (train) and private (car) transport modes.

**Figure 2.5: Comparative quality of selected cross-border connections**



The selection of cities and connections covered is based on a set of criteria applied throughout Europe within the ESPON CROSSGOV project<sup>4</sup>. These criteria include the presence of a railway station, population size, distance to the border, node hub and functionality. The thickness of the lines (orange for trains, grey for cars) indicates the average speed of connections in km/h, with thicker lines representing faster connections. Dotted lines in-between reflect the indexed ratio between train and car speeds. A brown colour scale (values below 100) denotes that trains are faster than cars along the specific route, while a green scale (values above 100) indicates the opposite.

The selected connections within the programme area include Waldshut-Tiengen-Schaffhausen, Zürich-Singen (Hohentwiel), Konstanz-St. Gallen, St. Gallen-Bregenz, Bregenz-Lindau, St. Gallen-Vaduz, Buchs-Vaduz, Vaduz-Feldkirch, Buchs-Feldkirch, and Vaduz-Chur. For most of these routes, namely Waldshut-Tiengen-Schaffhausen, Zürich-Singen (Hohentwiel), Konstanz-St. Gallen, St. Gallen-

<sup>4</sup> ESPON CROSSGOV Atlas, see Storymap on 'Space-time-lines': <https://gis-portal.espon.eu/arcgis/apps/storymaps/collections/345c978adf784ad-fac30c16b90219d35?item=4>

Bregenz, Bregenz–Lindau, Vaduz–Feldkirch, and Buchs–Feldkirch, train connections are faster than car travel. In contrast, car travel times on the St. Gallen–Vaduz and Vaduz–Chur routes are significantly shorter than by train. The Vaduz–Chur route, in particular, has very fast car travel times.

### 2.1.2.2 Cross-border catchment area based on mobility flows

#### Indicator description

This indicator measures the movement of people across borders. The density of cross-border movements by Twitter/X users is displayed on a grid cell covering an area of 20x20 km. The indicator does not differentiate between reasons for movement.

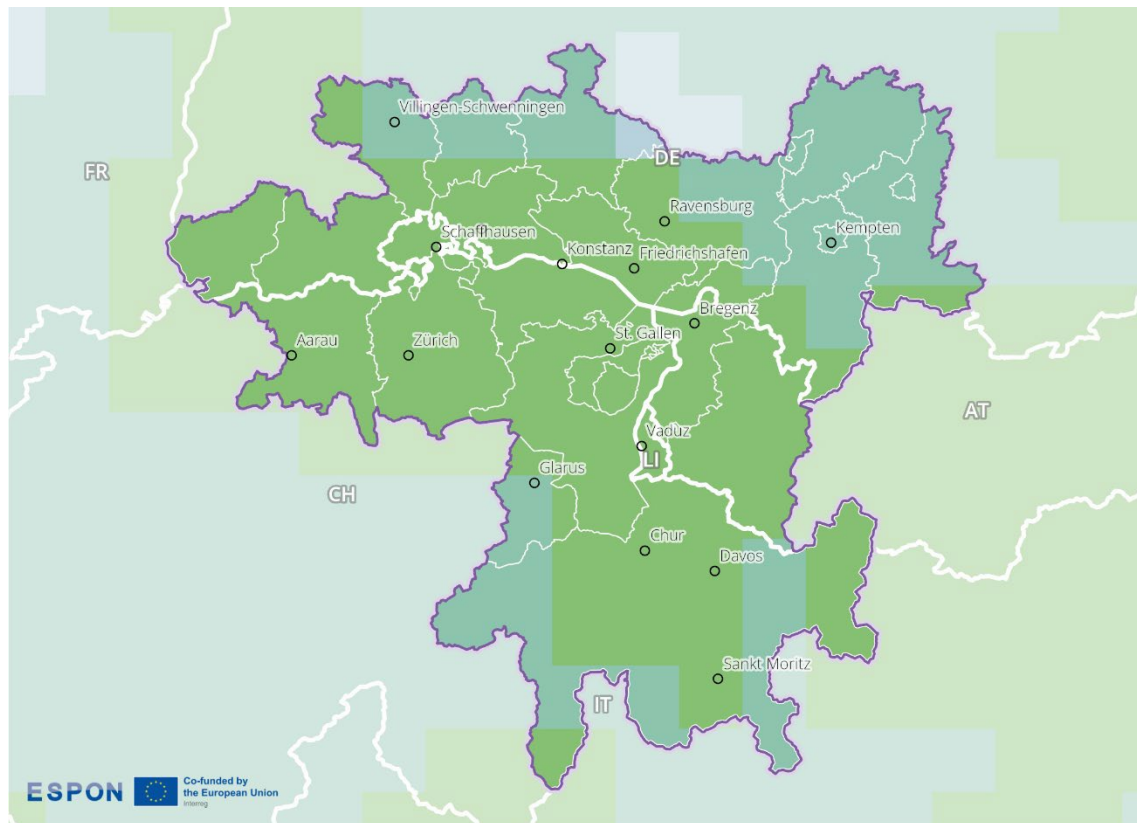
- **Source/method of retrieval:** The indicator is calculated based on Twitter (currently X) data. The digital footprint of individual users provides information about physical mobility flows and is used to calculate cross-border catchment areas of different intensity.
- **Temporal coverage:** 2013-2023
- **Unit:** n/a

Please refer to the technical annex for more information.

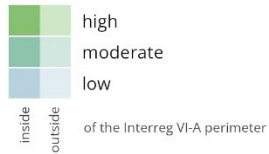
Figure 2.6 shows the cross-border catchment area in the border region based on mobility flows from 2013 to 2023, highlighting estimated cross-border mobility intensity across 3 different quartiles. The first quartile represents the 25% highest mobility intensity shown in dark green, the second quartile represents 25-50% coloured in green-blue, and the third quartile represents 50-75% in light blue.

The intensity of cross-border mobility of people within this cross-border region is relatively homogeneous. The highest levels of mobility intensity are recorded across most of the region, particularly in areas near the national borders of all 4 countries comprising this cross-border region. Moderate intensity values are observed around the city of Kempten, in the northern part of the German section of the region, as well as in the southern part of the Swiss section.

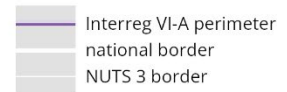
**Figure 2.6: Cross-border mobility intensity**



**Estimated cross-border mobility intensity (2013-2023)**



Level of detail: 20km aggregated grid  
 Source: FAU, UPOL, OIR & EPRC, ESPON Core-IB, 2026  
 Origin of data: ESPON CROSSGOV, 2026  
 ©EuroGeographics for administrative boundaries



© ESPON, 2026

### 2.1.2.3 Cross-border travel-time accessibility

#### Indicator description

The indicator shows the time it takes to travel from any location within a region to the next border crossing, using grid data and subsequent categorisations into accessibility groups of 30, 60 and 90 minutes. It reflects the accessibility in cross-border areas, considering road transport. The indicator can describe the quality and speed of road connections and thus spatial reach of the cross-border services.

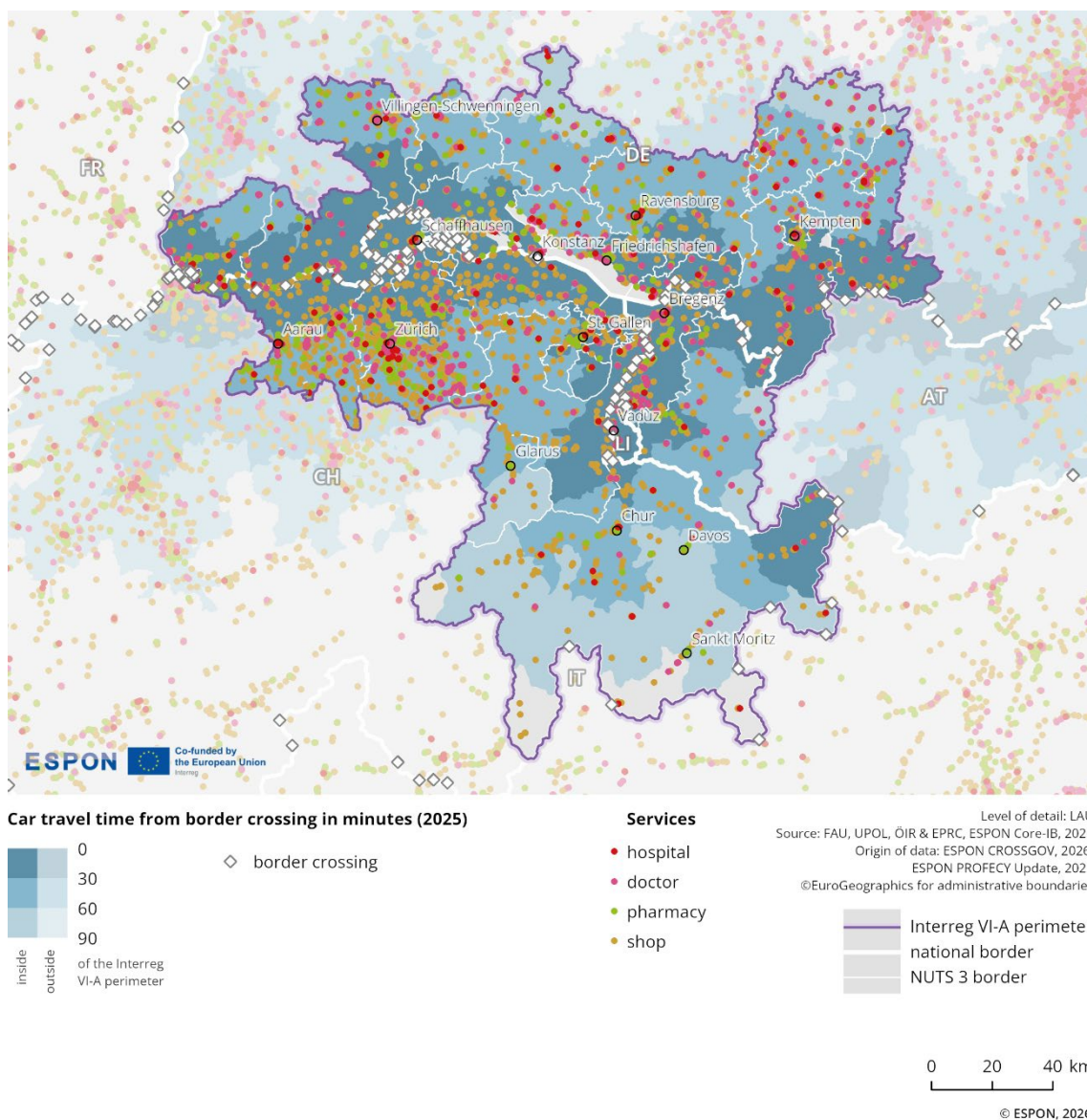
- **Source/method of retrieval:** Based on the OpenStreetMap road network, the travel time to the border is calculated for a grid of the border area. Based on this, areas are calculated within which border crossings can be reached below thresholds of 30, 60 and 90 minutes. As additional visual element, key services pharmacies, doctors, hospitals and shops (retrieved from the ESPON PROFECY project) are displayed and categorised into the accessibility groups.
- **Temporal coverage:** 2025 (first quarter, for accessibility data), 2021 (for service facility data)
- **Unit:** Minutes

Please refer to the technical annex for more information.

Figure 2.7 illustrates cross-border travel time accessibility in the Interreg area, showing the time distance from the national border in 2025. The legend indicates 3 travel time categories in minutes (30, 60, 90) represented by different shades of blue. In addition, it marks the location of services, including hospitals, doctors (general practitioners), pharmacies, and shops (supermarkets and convenient stores), with distinct coloured symbols. The map shows that along nearly the entire cross-border region, the travel accessibility is under 30 minutes. In the southern part of the border, there is a part with longer distances of up to 60 minutes or 90 minutes on the Austrian side. This part has the worst road connections due to the mountainous terrain of the Alps. The majority of German regions fall into the categories of 30- or 60-minute travel time accessibility. The area of Liechtenstein has reached the threshold of 30 minutes. The travel time accessibility in Swiss cross-border regions varies from 30 minutes to more than 90 minutes (in the south). The border, extending from west to east, has good and fast road connections, in contrast to the southernmost part.

The spreading of services like shops, hospitals, doctors and pharmacies is unequal. The concentration of services is primarily around the city of Zürich and extends along the German-Swiss border from west to east. Local concentration is near Vaduz.

**Figure 2.7: Travel-time accessibility from border crossings**



### 2.1.3 Key messages on the territorial dimension

This border region is characterised by high population density and significant territorial contrasts. Home to 6.4 million people with an average population density of 201 inhabitants per km<sup>2</sup>, it is far denser than most other European border regions. However, this density is uneven: Urban centres such as Zürich concentrate population and services, while large Alpine areas remain sparsely populated. This spatial difference reflects the interplay between geography and settlement patterns: valleys and lowlands provide more space for settlements and connectivity as mountain areas.

Between 2014 and 2024, the region grew by 9.1%, which is well above the European average. Growth was particularly strong in Switzerland, where employment opportunities and accessibility attracted people. The significant increase in the elderly population (16.6%) is important for regional planning, yet the simultaneous rise in children and a stable working-age population indicates that growth is not only due to ageing, but also to migration and families settling down. This contributes to the ongoing demand for new housing and services, particularly in areas that are already dynamic.

Settlement expansion is concentrated around cities and corridors adjacent to the border, demonstrating how demographic and economic growth leads to changes in land use. However,

settlement remains relatively static in high-altitude areas, highlighting the role of topography in influencing development. Cross-border comparisons also show that, while the border region is dynamic, growth is more moderate than in some national contexts. This suggests that settlement expansion is channelled by planning regulations and natural constraints.

Accessibility adds another layer of explanation. Strong road and rail connections facilitate cross-border commuting and the use of services, particularly along the lowland corridor from Zürich to Lake Constance. In contrast, Alpine areas face longer travel times. Service concentration in Zürich and along the Swiss-German border further strengthens these functional linkages, with mobility flows mirroring both economic opportunities and infrastructure quality.

## 2.2 Economic dimension

The economic dimension includes analyses of gross domestic product, labour market conditions, competitiveness, and key infrastructure and housing indicators. The aim is to illustrate the impact of the border on economic performance, whether it acts as a barrier or a bridge, and the extent to which integration is supported by labour mobility, remote working, and infrastructure connectivity.

### 2.2.1 Gross Domestic Product

This sub-dimension illustrates the economic situation of the border region by analysing gross domestic product (GDP). It shows economic development within the border region and how this has changed over time. Comparisons with the respective countries and the EU average provide important context for understanding the region's dynamics.

#### 2.2.1.1 Gross domestic product per capita at current market prices

##### Indicator description

The indicator shows the regional GDP/capita in current prices and its development over the past years. It highlights structural differences and similarities between the border region and the respective national figures as well as the European average. Furthermore, it highlights patterns within the border region, although has to be interpreted with care in the case of a strong presence of commuters.

- **Source:** Eurostat, Annual Regional Database of the European Commission (ARDECO)
- **Temporal coverage:** 2010-2023
- **Unit:** Euro per capita

Please refer to the technical annex for more information.

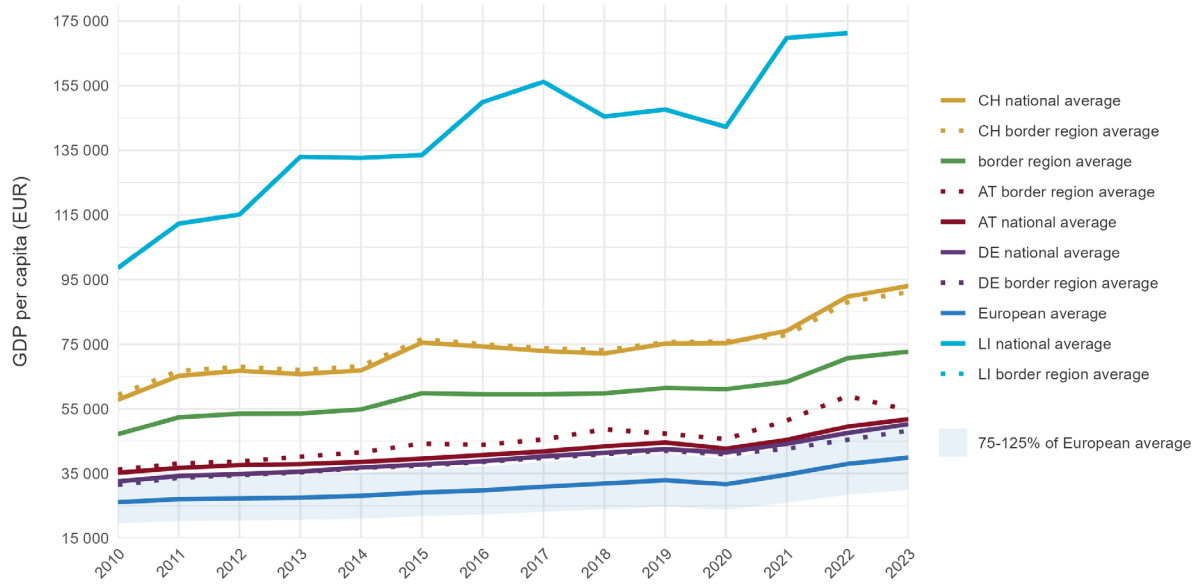
In 2022, the border region's GDP per capita was 197.5% of the EU average and 200.5% of the average for other European border regions (see Figure 2.8). Between 2014 and 2022, it grew by 29.2%, 6.5 percentage points less than the EU average and 6.0 percentage points less than the average for European border regions<sup>5</sup>.

All countries in the Alpenrhein-Bodensee-Hochrhein region have a GDP per capita well above the EU average, making it one of the economically strongest border regions in Europe. Liechtenstein stands

<sup>5</sup> Percentage changes are calculated using Eurostat data to ensure harmonised statistics from official sources. The latest year for which full coverage of all European regions is available on Eurostat is 2022. For visualisation purposes, ARDECO data has been used to enable longer time series to be visualised by filling the official dataset's existing gaps with model-based estimates. Therefore, slight deviations between the calculation and visualisation are possible.

out as a clear outlier. Within the rest of the region, GDP per capita in the Swiss and German parts is close to the national average, while the Austrian part is notably above it.

**Figure 2.8: Gross domestic product at current market prices (per capita)**



## 2.2.2 Labour market and commuting

This sub-dimension highlights the existing and potential functional links within the labour market of the border region. It examines the employment situation and commuting patterns, as well as the role of telework agreements, and considers developments over time based on analysed indicators. The analysis identifies factors that facilitate or hamper cross-border labour market integration.<sup>6</sup>

### 2.2.2.1 Share of employment

#### Indicator description

This indicator shows the share of employees in the population aged 15 to 64. Although it does not fully capture entrepreneurs, marginal employees, or civil servants, this is an important statistic for understanding general labour market patterns. It covers 2 aspects: first, high values can result from a high proportion of the resident population being employed. Second, high values can result from a high number of incoming commuters (from other NUTS3 regions within the country or from neighbouring countries). The same arguments apply to low values: they may indicate low levels of employment, or they may result from high shares of outgoing commuters. Values of more than 100% are possible, since the number of incoming commuters can exceed the number of inhabitants aged 15 to 64 (including both domestic and cross-border commuters).

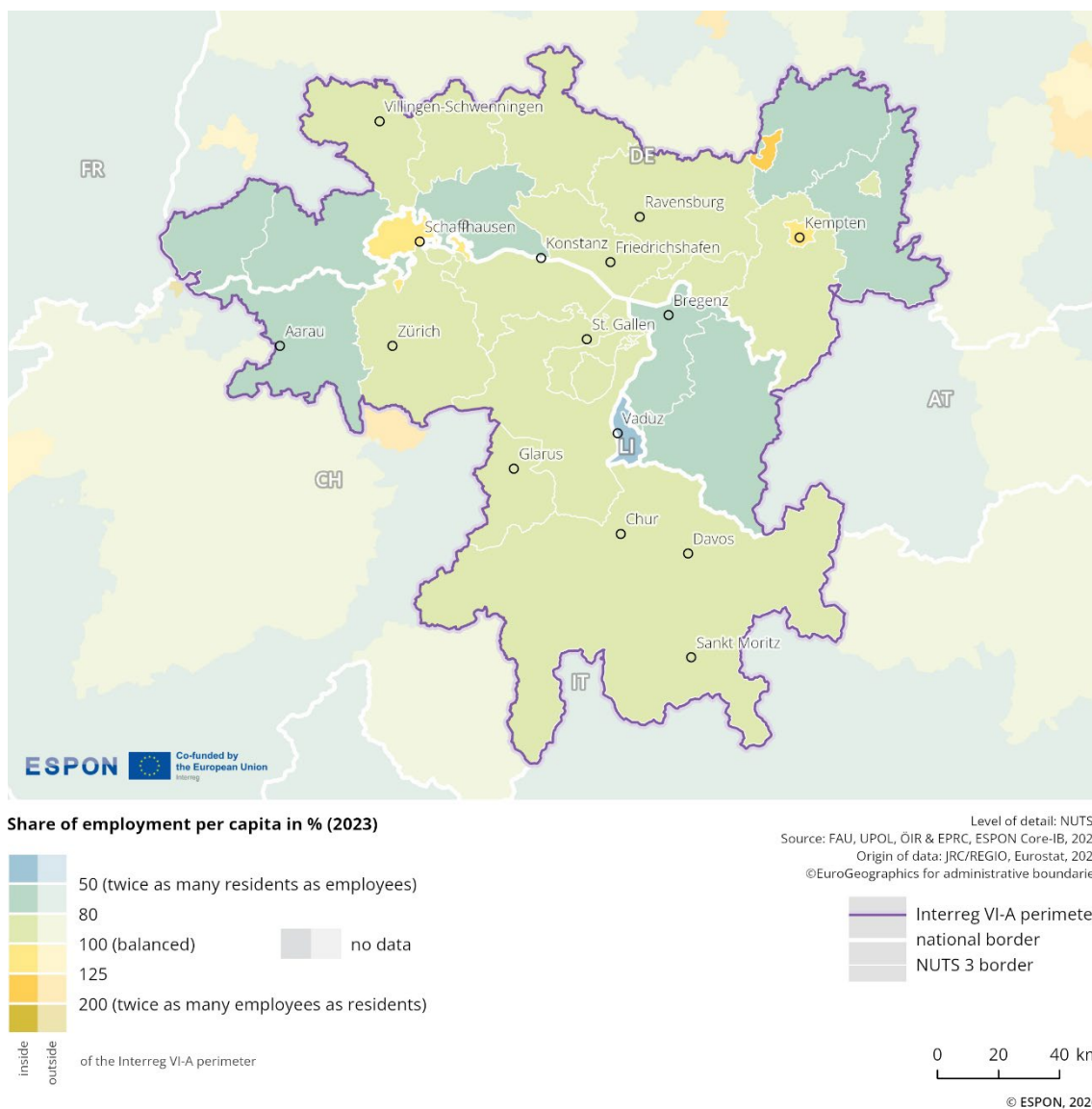
- **Source:** Eurostat, Annual Regional Database of the European Commission (ARDECO)
- **Temporal coverage:** 2014-2023
- **Unit:** Share in %

Please refer to the technical annex for more information.

Figure 2.9 illustrates the share of employment per capita in the population aged 15 to 64 in 2023. The data are categorised into ranges from below 50% (twice as many residents aged 15 to 64 as employees) to above 200% (twice as many employees as residents aged 15 to 64), with 100% representing a balanced ratio. Blue or green-coloured regions indicate more residents aged 15 to 64 than employees, while yellow regions indicate more employees than residents aged 15 to 64.

<sup>6</sup> See also: European Commission 2024: Cross-Border Regional Labour Market Analysis, <https://op.europa.eu/s/AazM>

**Figure 2.9: Employment share<sup>7</sup>**



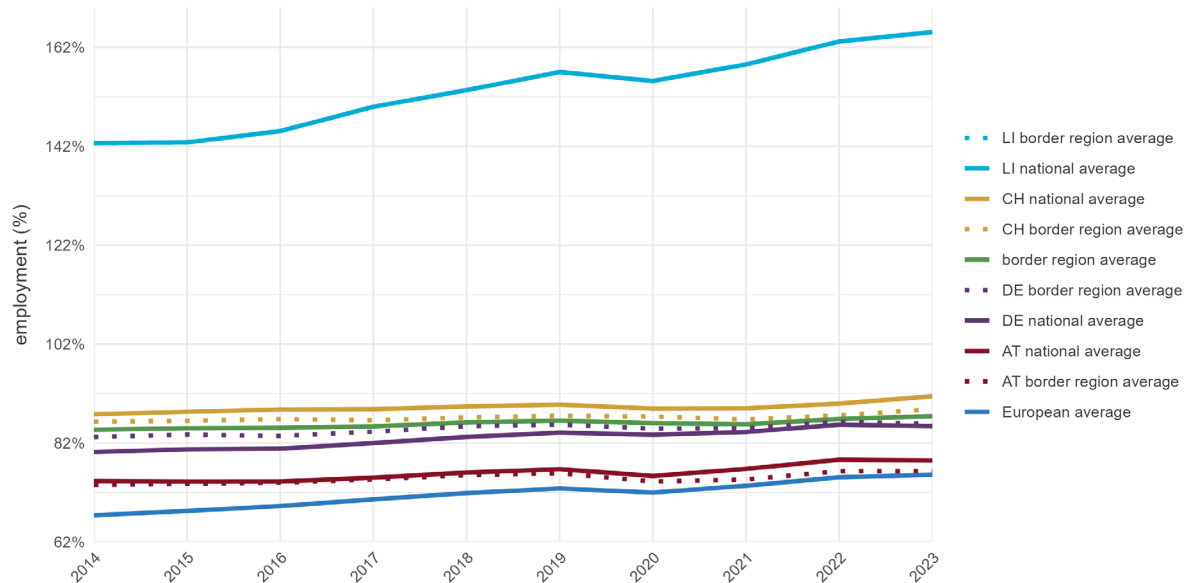
The share of employment in this border region is relatively stable, with the average for the entire region at 87.42% in 2023, having increased by 2.73 percentage points since 2014. Due to differing values, differences are noticeable between the Austrian part and the other countries, as well as between Liechtenstein and the other states. In the Austrian part share of employment values mostly fall within the 50% to 80% range. In the German and Swiss parts, the majority of areas have share of employment values between 80% and 100%. The highest values are found around the cities of Memmingen, Kempten and Schaffhausen, and in Liechtenstein. When comparing the share of employment in this border region with different averages, the following can be observed (see Figure 2.10):

- › Compared to the European average, values in the cross-border region are higher by 11.9 percentage points, while in 2014 the difference was 17.3 percentage points.
- › Compared to the Austrian average, values in the cross-border region are higher by 9 percentage points, with a 10.4 percentage point difference in 2014.
- › Compared to the German average, values in the cross-border region are higher by 2 percentage points, while in 2014 the region's values were 4.5 percentage points higher.

<sup>7</sup> Note: In this map, 'residents' refers to the population aged 15 to 64.

- › Compared to the Swiss average, values in the cross-border region are lower by 4 percentage points, compared to 3.1 percentage points lower in 2014.
- › Compared to the Liechtenstein average, values in the cross-border region are lower by 77.7 percentage points, while in 2014 the region's values were 58 percentage points lower.
- › The German border area reaches values 0.5 percentage points higher than the German national average, the Austrian border area is 2.2 percentage points lower than the Austrian national average, and the Swiss border area is 2.6 percentage points lower than the Swiss national average.
- › Compared to the average of all cross-border regions, values are higher by 13 percentage points, while in 2014 they were higher by 18.4 percentage points.

**Figure 2.10: Employment share over time (comparison)**



### 2.2.2.2 Share of working-age population

#### Indicator description

This indicator shows the share of people aged 15 to 64 in the total population, reflecting the potential working-age population. The population counted includes all residents who live in the country permanently, excluding foreign students and military personnel. Using the 15–64 age range is a standard European statistical proxy, since differences in retirement age or labour participation across countries cannot be captured systematically. It allows for regional differentiation of potential workforce throughout the border region.

- **Source:** Eurostat, Annual Regional Database of the European Commission (ARDECO)
- **Temporal coverage:** 2014-2023
- **Unit:** Share in %

Please refer to the technical annex for more information.

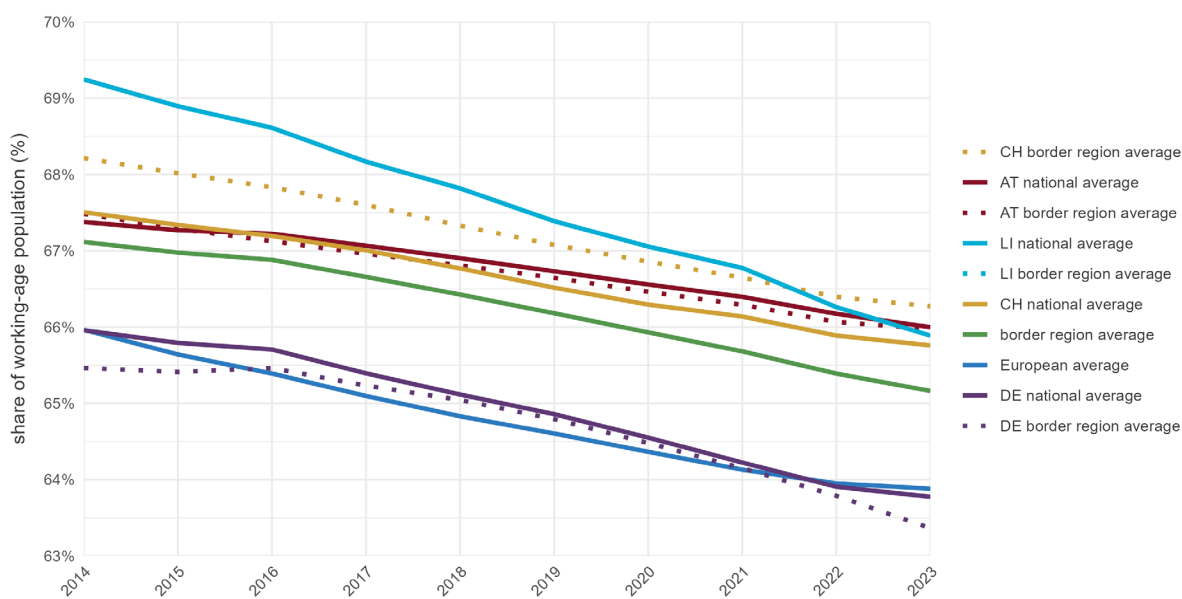
Figure 2.11 illustrates the evolution of the share of the working-age population in the Germany-Austria-Switzerland-Liechtenstein (Alpenrhein-Bodensee-Hochrhein) cross-border region between 2014 and 2023. In 2023, the border region shows an average working-age population share of 65.2%, compared to the European average of 63.9% and 63.7% for the average of all cross-border regions.

The share of the working-age population in the cross-border region is noticeably higher than the German border average (63.4%) and the German national average (63.8%), on the other hand it is slightly lower than the values observed at both national and border region levels in Austria (both 66.0%), Switzerland (65.8% and 66.3%) and Liechtenstein (65.9%). Interestingly, the average in the Swiss border regions is higher than the national average. For Germany and Austria, however, it is the opposite.

Between 2014 and 2023, the region experienced a 1.9 percentage point decrease in the working-age population share (from 67.1% in 2014 to 65.2% in 2023), which is quite similar to the average decline at the European level (-2.1 percentage points) and average for all cross-border regions (-2.2 percentage points). While all countries in the cross-border region show a decreasing trend, the decline has been most severe in Liechtenstein (-3.3 percentage point), followed by Germany (-2.1 percentage point in the regional average, -2.2 percentage point in the national average), while Switzerland (-1.9 percentage points at the border and -1.7 percentage points at the national level) and Austria (-1.5 percentage points at the border and -1.4 percentage points at the national level) shows rather moderate levels of decline.

In summary, the Germany-Austria-Switzerland-Liechtenstein region experienced a moderate decline in the share of the working-age population from 2014 to 2023, with border areas generally tracking national trends but remaining above the European average.

**Figure 2.11: Share of working-age population over time (comparison)**



### 2.2.2.3 Employment by sector

#### Indicator description

The indicator differentiates the number of jobs in a region by sector. This indicator focuses on workplace-based employment, providing insight into the employment landscape of a region. The dataset can be disaggregated according to “10-sector” NACE (Nomenclature statistique des activités économiques dans la Communauté européenne) classifications, allowing for detailed analysis of employment distribution across various industries.

- **Source:** Eurostat, Annual Regional Database of the European Commission (ARDECO)
- **Temporal coverage:** 2014-2023
- **Unit:** Share in %

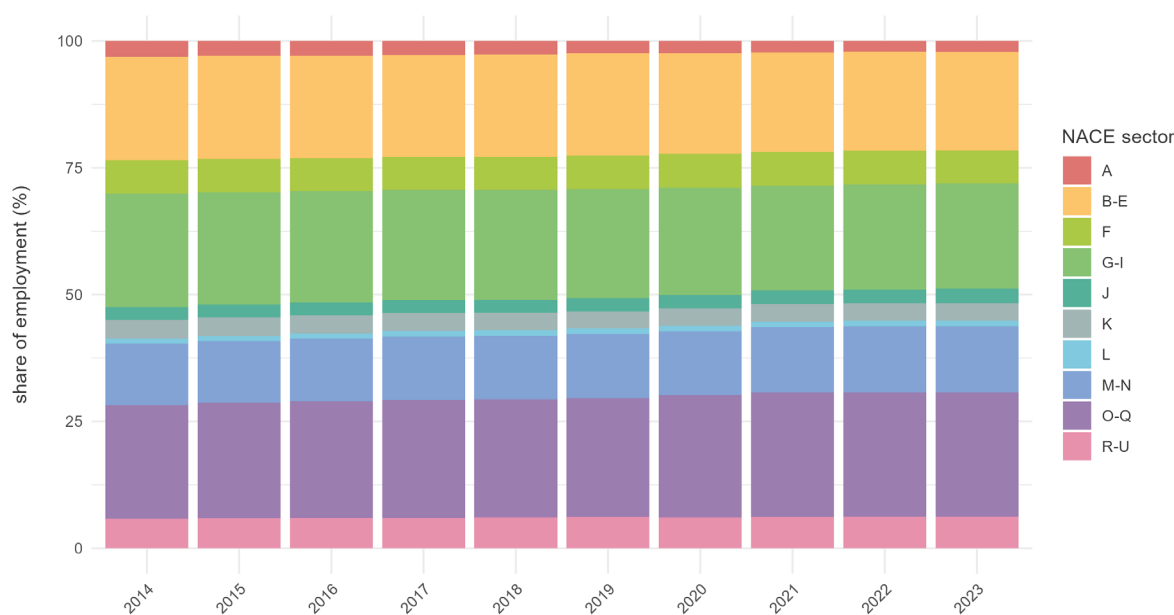
Please refer to the technical annex for more information.

Figure 2.12 illustrates the relative number of jobs in the border area differentiated by sectors. It shows where jobs are located (not where employed persons live). This workplace-based indicator offers insight into the employment structure of a region.

The dataset uses a '10-sector' classification based on NACE categories. The sectoral breakdown is as follows:

- › A: Agriculture, forestry and fishing
- › B-E: Mining and quarrying (B), Manufacturing (C), Electricity, gas, steam and air conditioning supply (D), Water supply; sewerage, waste management and remediation activities (E)
- › F: Construction
- › G-I: Wholesale and retail trade; repair of motor vehicles and motorcycles (G), Transportation and storage (H), Accommodation and food service activities (I)
- › J: Information and communication
- › K: Financial and insurance activities
- › L: Real estate activities
- › M-N: Professional, scientific and technical activities (M), Administrative and support service activities (N)
- › O-Q: Education (O), Human health and social work activities (Q)
- › R-U: Arts, entertainment and recreation (R), Other service activities (S), Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use (T), Activities of extraterritorial organisations and bodies (U)

**Figure 2.12: Employment by sector (comparison)**



A: Agriculture, forestry and fishing  
 B-E: Mining and quarrying (B), Manufacturing (C), Electricity, gas, steam and air conditioning supply (D), Water supply; sewerage, waste management and remediation activities (E)  
 F: Construction  
 G-I: Wholesale and retail trade; repair of motor vehicles and motorcycles (G), Transportation and storage (H), Accommodation and food service activities (I)  
 J: Information and communication  
 K: Financial and insurance activities  
 L: Real estate activities  
 M-N: Professional, scientific and technical activities (M), Administrative and support service activities (N)  
 O-Q: Education (O), Human health and social work activities (Q)  
 R-U: Arts, entertainment and recreation (R), Other service activities (S), Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use (T), Activities of extraterritorial organisations and bodies (U)

Between 2014 and 2023, the relative number of jobs in the different sectors remains fairly stable. There is a slight decline in the share of employment in Mining and quarrying (B), Manufacturing (C), Electricity, gas, steam and air conditioning supply (D), Water supply; sewerage, waste management and remediation activities (E) and Wholesale and retail trade; repair of motor vehicles and motorcycles (G), Transportation and storage (H) and Accommodation and food service activities (I). Conversely, there is a modest increase in the number of jobs in Education (O) and Human health and social work activities (Q).

Over the entire period, the sectors with the highest share of jobs are 'B-E' (mining, quarrying, manufacturing, electricity, gas, steam and air conditioning supply, water supply; sewerage, waste management and remediation activities, 'G-I' (wholesale and retail trade; repair of motor vehicles and motorcycles, transportation and storage, accommodation and food service activities) and 'O-Q' (education, human health and social work activities).

## 2.2.2.4 Outgoing cross-border commuters

### Indicator description

The indicator shows outgoing cross-border commuting dynamics at NUTS3 level. Even though no origin-destination information can be provided, it is assumed that commuters primarily travel across the nearest border. Spatial, economic and population arguments are combined to calculate the number of outgoing cross-border commuters.

- **Source/method of retrieval:** Eurostat/LFS data on outgoing commuters currently available on NUTS2 level has been regionalised for NUTS3 by means of weighting by border length, NUTS3 population-weighted centroid distance to border, population per NUTS3 region (15–64 years old) and real compensation per employee
- **Temporal coverage:** 2015-2023
- **Unit:** Share in %

Please refer to the technical annex for more information.

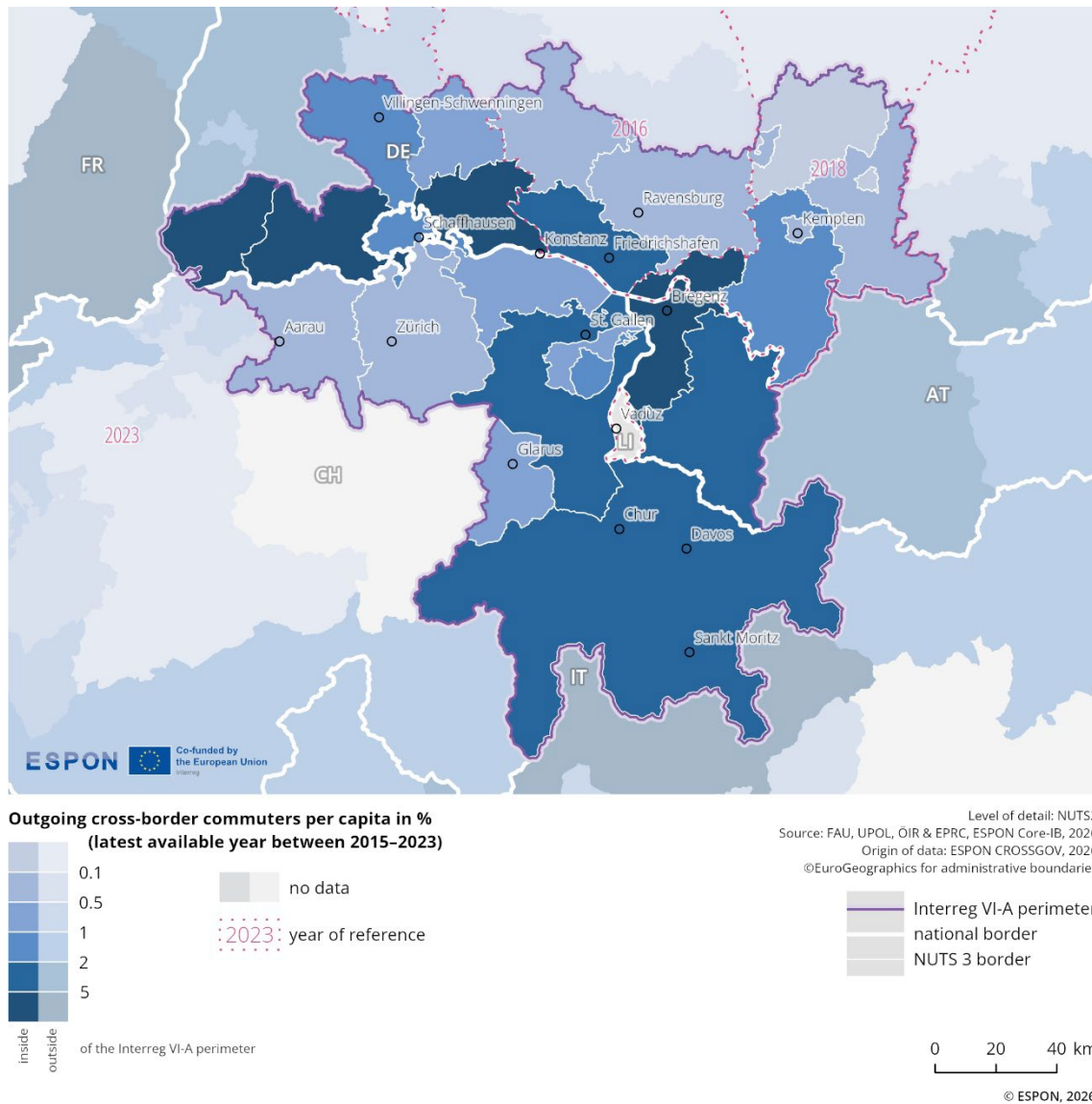
Commuting is one of the most relevant cross-border flows to identify functional linkages. Figure 2.13 illustrates the share of outgoing commuters per capita for each NUTS3 region (more concretely speaking the share of outgoing commuters among the residential population of the age group 15-64 years old, resembling the potential labour force). Origin-destination information cannot be provided, but the share of outgoing commuters in regions close to the border indicates the relevance of commuting. It highlights functional relations in the labour market within the cross-border region.

The map illustrates the share of cross-border commuters, based on the most recent available data. It shows relatively strong yet unevenly distributed cross-border commuting activity in areas directly adjacent to the borders.

The highest shares of outgoing commuters are found in regions mostly in direct proximity to Switzerland. In Germany, high levels of outgoing commuters are observed in Lörrach, Konstanz, and Lindau (Bodensee)<sup>8</sup>. In Austria, the region of Rheintal–Bodenseegebiet shows the highest shares. In Switzerland, the cantons of Graubünden and St. Gallen also record particularly high shares of outgoing commuters. It is likely that some commuters are also heading to Liechtenstein.

<sup>8</sup> See Eurostat Statistical Atlas for NUTS3 (2021) regions: <https://ec.europa.eu/statistical-atlas/viewer/?config=typologies.json&ch=NUTS&mids=BKGCNT.NUTS2021L3.CNTOVL&o=1.1.0.7&center=49.69576.14.3332.4&lcis=NUTS2021L3&>

**Figure 2.13: Outgoing cross-border commuting patterns**



### 2.2.2.5 Cross-border telework agreements

#### Indicator description

The indicator shows what kind of legal framework for cross-border telework is enacted.

- **Source/method of retrieval:** The indicator is based on information about the legal framework for social security regarding cross-border teleworking, categorised by border pair.
- **Temporal coverage:** Status as of March 2025
- **Unit:** n/a

Please refer to the technical annex for more information.

All countries involved in the programme are signatories of the 2023 Framework Agreement on Cross-Border Telework. Under this agreement, cross-border workers can telework from their country of residence for up to 50% of their total working time without affecting their social security affiliation.

### 2.2.3 Competitiveness

This sub-dimension illustrates the competitiveness of the border region by analysing the main industry sectors that contribute to its economic development. It assesses gross value added (GVA) at basic prices by sector, as well as nominal compensation per hour worked, in order to understand productivity levels and sectoral strengths.

#### 2.2.3.1 Gross value added at basic prices by sector

##### Indicator description

The indicator shows the gross value added (GVA), which is a measure of the contribution of a country or region to the economy. Regional GVA represents the value generated by all units involved in the production of goods and services within a specific area. This indicator can be disaggregated by industry and service sector, allowing for a detailed analysis of economic contributions across different fields. Additionally, the sum of GVA across all industries or sectors, combined with taxes on products and minus subsidies on products, yields the gross domestic product (GDP) of the region. The dataset is available in "10-sector" NACE classifications, facilitating comprehensive evaluations of the regional economy.

- **Source:** Annual Regional Database of the European Commission (ARDECO)
- **Temporal coverage:** 2014-2023
- **Unit:** Million purchasing power standards (PPS)

Please refer to the technical annex for more information.

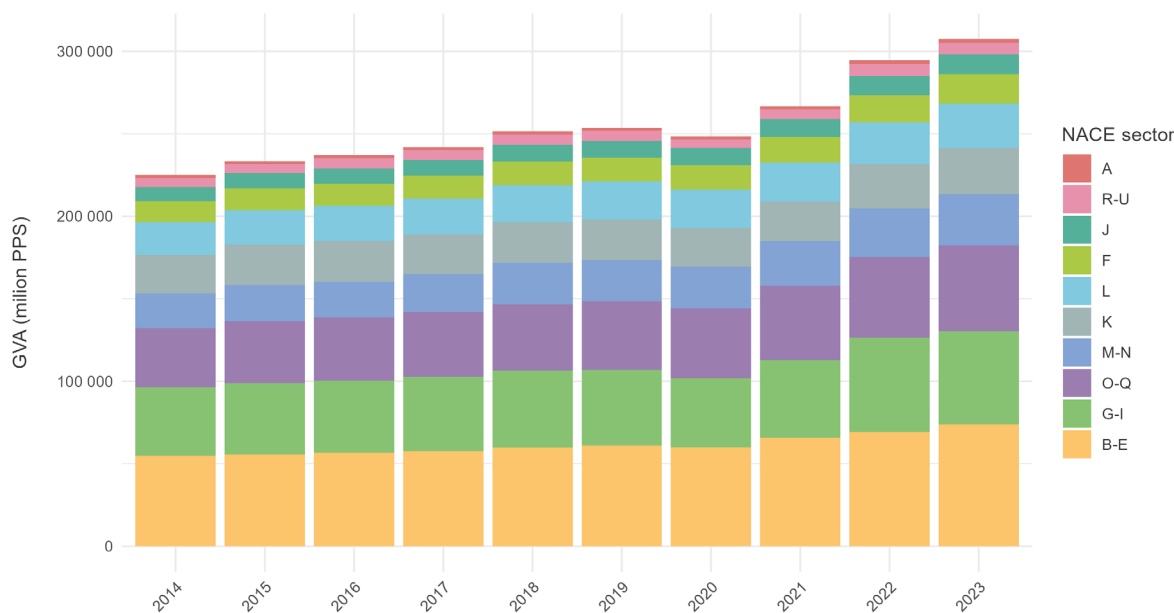
Figure 2.14 visualises gross value added (GVA), which is an important indicator of economic activity. GVA measures the value created by all economic activities involved in producing goods and services in a specific area. It is differentiated by sectors to provide detailed insights into the economic contributions of different fields.

The dataset uses a '10-sector' classification based on NACE categories. The sectoral breakdown is as follows:

- › A: Agriculture, forestry and fishing
- › B-E: Mining and quarrying (B), Manufacturing (C), Electricity, gas, steam and air conditioning supply (D), Water supply; sewerage, waste management and remediation activities (E)
- › F: Construction
- › G-I: Wholesale and retail trade; repair of motor vehicles and motorcycles (G), Transportation and storage (H), Accommodation and food service activities (I)
- › J: Information and communication
- › K: Financial and insurance activities
- › L: Real estate activities
- › M-N: Professional, scientific and technical activities (M), Administrative and support service activities (N)
- › O-Q: Education (O), Human health and social work activities (Q)
- › R-U: Arts, entertainment and recreation (R), Other service activities (S), Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use (T), Activities of extraterritorial organisations and bodies (U)

Between 2014 and 2023, the GVA in the border area of Germany-Austria-Switzerland-Liechtenstein (Alpenrhein-Bodensee-Hochrhein) increased from 225,261 million purchasing power standards (PPS) to 307,446 million PPS, a growth of 36%. Sector groups B-E, G-I, and O-Q together make up over half of the total GVA, highlighting their significant contribution to the regional economy within the border area. The sector groups B-E contributed the largest share, with a total of 73,911 million PPS in 2023. This underlines the significance of sectors such as Mining and quarrying (B), Manufacturing (C), Electricity, gas, steam and air conditioning supply (D), Water supply; sewerage, waste management and remediation activities (E) in the Germany-Austria-Switzerland-Liechtenstein (Alpenrhein-Bodensee-Hochrhein) border region.

**Figure 2.14: Gross value added at basic prices by sector (comparison)**



A: Agriculture, forestry and fishing  
 B-E: Mining and quarrying (B), Manufacturing (C), Electricity, gas, steam and air conditioning supply (D), Water supply; sewerage, waste management and remediation activities (E)  
 F: Construction  
 G-I: Wholesale and retail trade; repair of motor vehicles and motorcycles (G), Transportation and storage (H), Accommodation and food service activities (I)  
 J: Information and communication  
 K: Financial and insurance activities  
 L: Real estate activities  
 M-N: Professional, scientific and technical activities (M), Administrative and support service activities (N)  
 O-Q: Education (O), Human health and social work activities (Q)  
 R-U: Arts, entertainment and recreation (R), Other service activities (S), Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use (T), Activities of extraterritorial organisations and bodies (U)

### 2.2.3.2 Nominal compensation per hour worked

#### Indicator description

The indicator shows the average income paid for each hour worked, known as compensation per hour worked. This measure is calculated by dividing the “compensation of employees at current prices” by the total number of “hours worked (employees).” Employees, in this context, are defined as individuals engaged by contract in productive activities for a resident unit, receiving remuneration irrespective of their place of residence. The total hours worked is considered the most appropriate measure of labour input, representing the aggregate number of hours actually worked by employees. This indicator provides valuable insights into labour productivity and wage dynamics within the economy.

- **Source:** Annual Regional Database of the European Commission (ARDECO)
- **Temporal coverage:** 2023 (missing data from 2023 in Switzerland were supplemented by values from 2022)
- **Unit:** Euro

Please refer to the technical annex for more information.

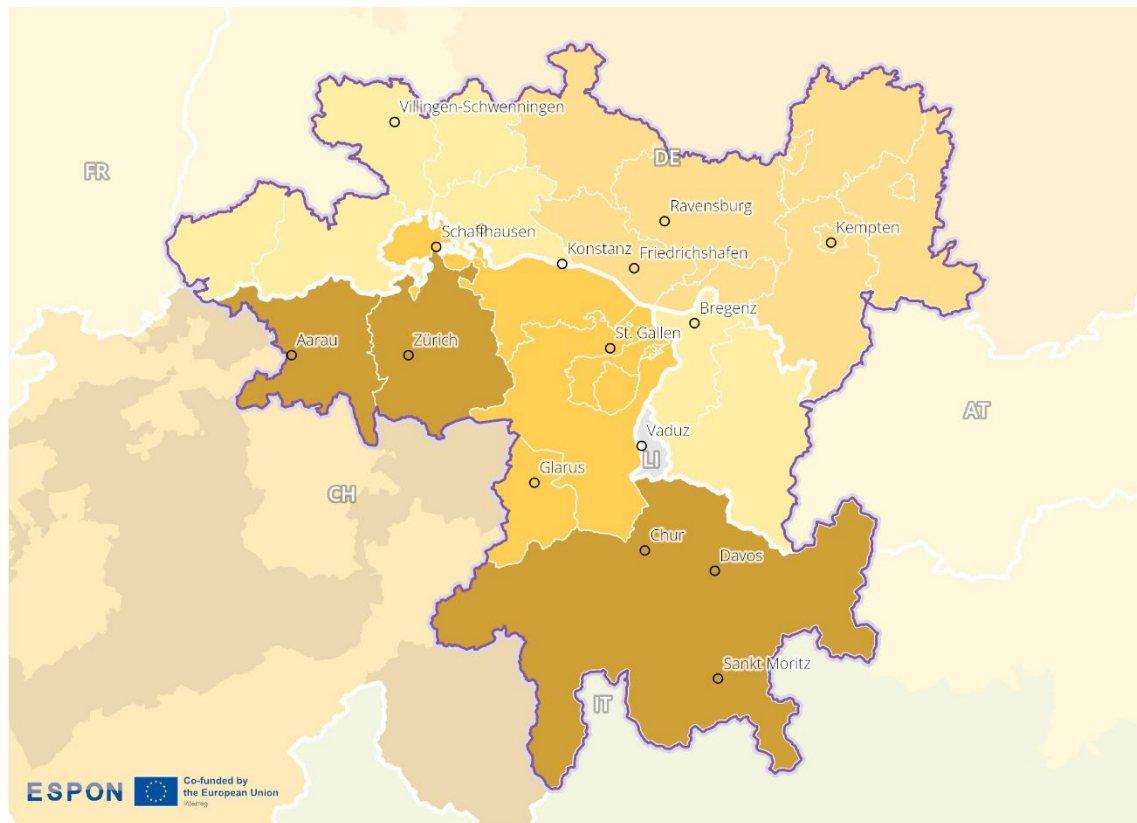
Figure 2.15 shows the average values for the 'compensation per hour worked'. This indicator is calculated by dividing the total compensation of employees (at current prices) by the total number of hours worked by those employees. In this context, 'employees' are defined as individuals engaged by contract in productive activities. The data is available for the place of work, regardless of the place of residence. Total hours worked represent the actual number of hours worked by employees and are considered the most accurate measure of labour input.

In 2023, nominal compensation per hour worked in the Alpenrhein-Bodensee-Hochrhein border region appears to be quite unevenly distributed. In the German and Austrian parts of the cross-border region, the average hourly income ranges between €30 and €50<sup>9</sup>. All Swiss NUTS3 regions report higher values than €50. No data is available for this indicator in Liechtenstein. To contextualize the regional pattern shown in the figure, it is noteworthy that the national average hourly compensation reaches €39.40 in Germany, €37.90 in Austria, and €63.30 in Switzerland. This helps situate the border region within national labour productivity context.

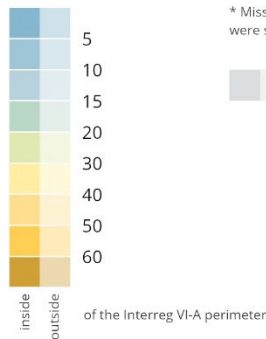
Cross-border wage differences can encourage labour migration from lower-wage areas to more economically prosperous neighbouring regions, creating both opportunities and challenges for local labour markets and social systems.

<sup>9</sup> See Eurostat Statistical Atlas for NUTS3 (2021) regions: <https://ec.europa.eu/statistical-atlas/viewer/?config=typologies.json&ch=NUTS&mids=BKGCNT.NUTS2021L3.CNTOVL&o=1.1.0.7&center=49.69576,14.3332,4&lcis=NUTS2021L3&>

**Figure 2.15: Average income per hour**



**Average income per hour worked in euros (2023\*)**



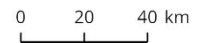
\* Missing data from 2023 in Switzerland were supplemented by values from 2022.

no data

of the Interreg VI-A perimeter

Level of detail: NUTS3  
 Source: FAU, UPOL, OIR & EPRC, ESPON Core-IB, 2026  
 Origin of data: ARDECO database, JRC / REGIO, 2006-2023  
 ©EuroGeographics for administrative boundaries

Interreg VI-A perimeter  
 national border  
 NUTS 3 border



© ESPON, 2026

## 2.2.4 Infrastructure and housing

This sub-dimension shows the impact of the border on infrastructure and housing in the region. It assesses housing prices and average internet speed in order to identify cross-border effects, including potential price spillovers and disparities. The analysis reveals whether infrastructure and housing markets facilitate integration or expose structural challenges that are specific to the border area.

### 2.2.4.1 Advertised sales prices

#### Indicator description

The indicator shows the advertised sales price per square meter for houses/appartements as retrieved from commercial real estate websites at national level. In the cross-border region, local differences between average sales prices are highlighted and the “cutting” effect of the border and its influence on price levels is visualised.

- **Source/method of retrieval:** Processed ESPON House4all data. The original data is collected via web-scraping of national listing websites over a one-year period.
- **Temporal coverage:** 2024/2025
- **Unit:** Average price per square meter (€/m<sup>2</sup>)

Please refer to the technical annex for more information.

Figure 2.16 illustrates the advertised sales price of housing in 2025 across the border region. The data are categorised into ranges of average housing price per square metre, from below 250 €/m<sup>2</sup> up to more than 8,000 €/m<sup>2</sup>, shown in colours ranging from purple and blue to green, yellow and orange.

The map shows the average housing prices within the border region. Lower prices are found in the northern part, where values drop below 2,000 €/m<sup>2</sup>. The average advertised sales price in the German part of the border region is around 3,207 €/m<sup>2</sup>, in the Swiss part around 7,088 €/m<sup>2</sup>, while no information is available about the sales prices in Liechtenstein. The overall average for the entire border region is 5,647 €/m<sup>2</sup>, which is considerably higher than the average across all evaluated EU border regions (1,900 €/m<sup>2</sup>). In several municipalities, prices reach and exceed the European average of 5,600 €/m<sup>2</sup>.

**Figure 2.16: Advertised housing prices**

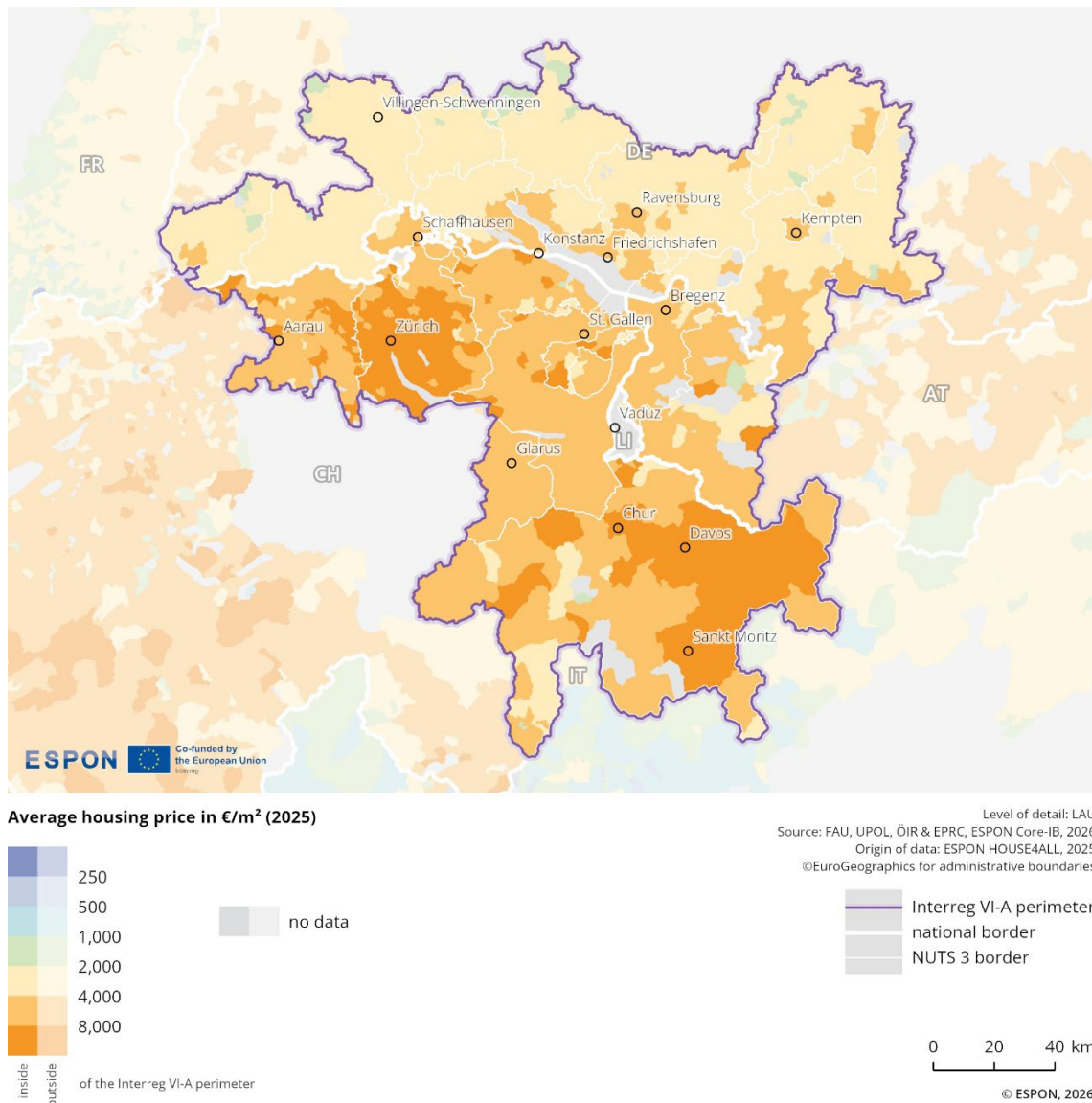
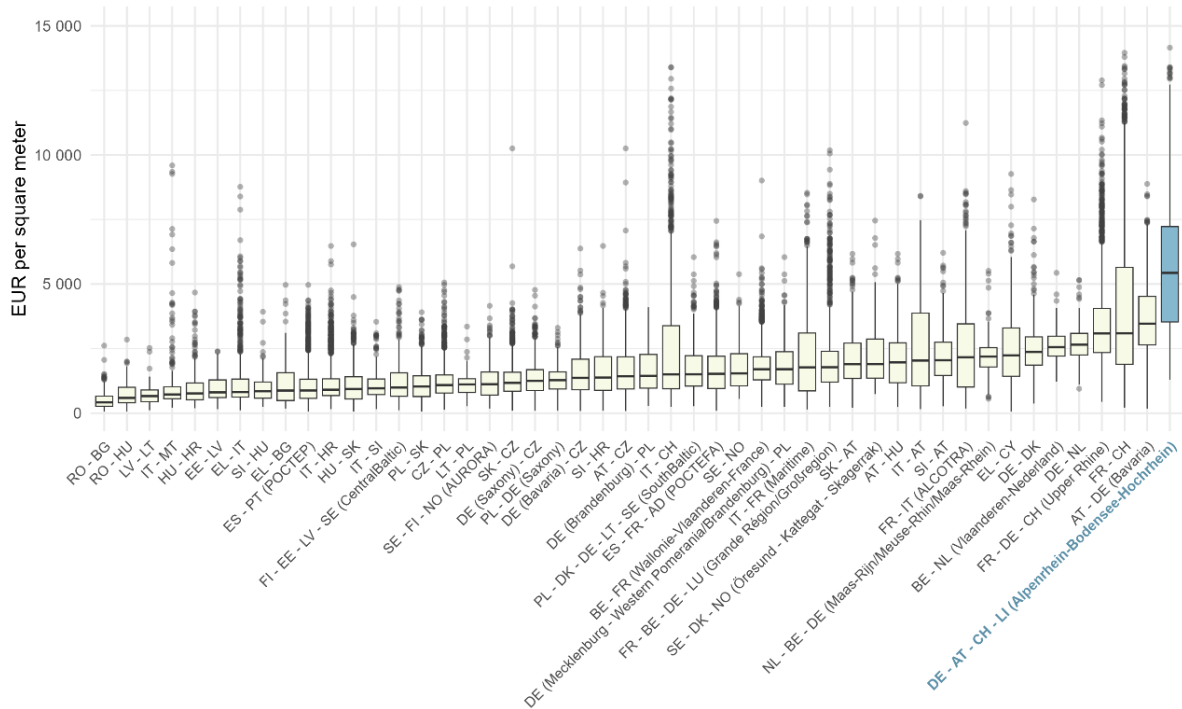


Figure 2.17 illustrates the distribution of sales prices across municipalities within the border area. The very large interquartile range (IQR, represented by the box) indicates substantial variation, highlighting pronounced spatial disparities in sales prices within the border area. The boxplot also displays extreme values (shown as individual dots), with some municipalities recording prices of up to nearly 15,000 €/m<sup>2</sup>.

**Figure 2.17: Advertised housing prices (comparison)**



### 2.2.4.2 Average internet speed

#### Indicator description

The indicator shows the population weighted average internet speed available at municipal level. It highlights differences in the “digital preparedness”. In border regions, this indicator is particularly relevant for identifying digital infrastructure gaps that may hamper balanced development and cross-border integration.

- **Source/method of retrieval:** Processing of data provided by Speedtest by Ookla Global Fixed and Mobile Network Performance Maps, based on Ookla’s analysis of Speedtest Intelligence data.
- **Temporal coverage:** 2022
- **Unit:** Download speed in Mbps

Please refer to the technical annex for more information.

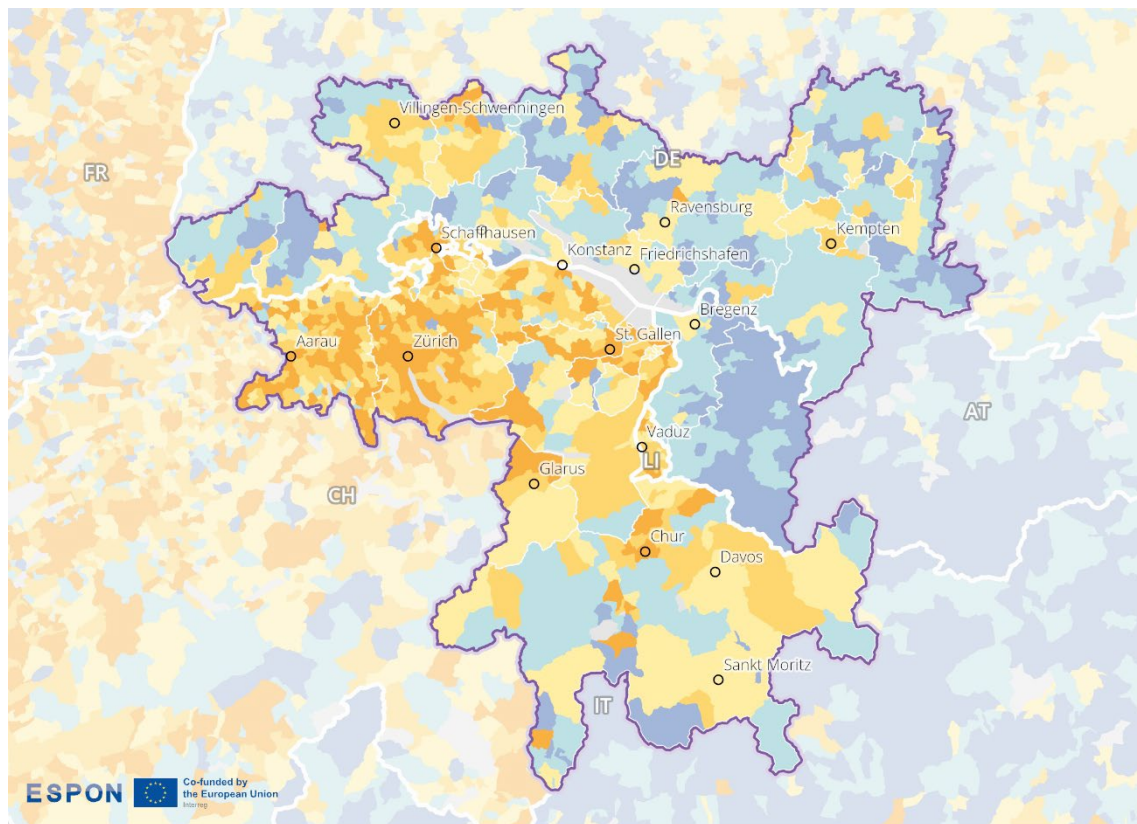
Digitalisation is a highly relevant issue in European border regions, with the overarching objective of ensuring appropriate digital access. It is widely recognised as a key precondition for successful regional and economic development. A major challenge in this process is preventing ‘digital divides’, i.e., avoiding significant disparities in economic, social, and spatial terms.

Average internet speed is a telling indicator of such disparities, highlighting differences in ‘digital preparedness’ at the local level. Figure 2.18 shows the average download speed at the municipality level. The colour scheme ranges from dark blue (very slow speeds) to orange (very fast speeds). The

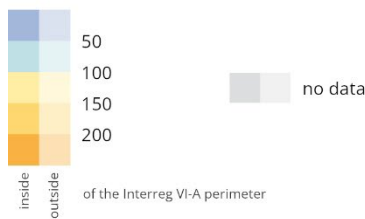
data, prepared by OBC Transeuropa for EDJNet, is based on Speedtest Intelligence data from Speedtest/Ookla's Global Fixed and Mobile Network Performance Maps for the first quarter of 2022. The average download speeds are expressed in megabits per second (Mbps), not to be confused with megabytes per second (MBps).

The map reveals significant differences between urban and rural areas, with values ranging from under 50 Mbps to over 200 Mbps. Cities such as Konstanz, Ravensburg, Kempten, Schaffhausen, Aarau, Zürich, Glarus, Davos, and Sankt Moritz report relatively high average speeds, while the surrounding areas tend to have significantly lower values. This may be due to the greater return on investment typically associated with digital infrastructure projects in urban areas compared to rural ones. In Switzerland and Liechtenstein, the average internet speed is significantly higher than in Germany and Austria.

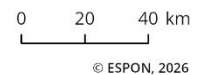
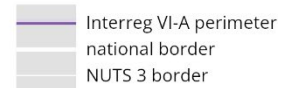
**Figure 2.18: Average internet download speed**



**Average internet speed in Mbps (2022)**



Level of detail: LAU  
 Source: FAU, UPOL, ÖIR & EPRC, ESPON Core-IB, 2026  
 Origin of data: Orinaldo Gjergji, European Data Journalism Network, 2022  
 ©EuroGeographics for administrative boundaries



### 2.2.5 Key messages on the economic dimension

The border region is one of the most prosperous areas in Europe. Its GDP per capita is more than double the EU average, reflecting its robust economic infrastructure. However, the region's GDP per capita growth is slightly slower than the European average, suggesting that it is already operating at a high level of productivity.

High employment rates confirm the area's economic strength. In 2023, employment rates were well above the European average, though there were variations between countries. Liechtenstein recorded high values, while Austria's figure was somewhat lower than the regional average. The relatively high proportion of the working-age population (66.0%) compared to European and border region averages provides a stable demographic foundation, although the gradual decline since 2014 highlights long-term challenges associated with an ageing population.

The employment structure and gross value-added show stability, with manufacturing, trade and services such as health and education remaining dominant. This mix supports economic resilience, but also explains the uneven geography of labour markets. Cross-border commuting plays a significant role, particularly from Germany and Austria into Switzerland and Liechtenstein, where wage levels are notably higher. Differences in nominal compensation per hour create strong incentives for daily mobility, with Swiss regions such as Zürich reporting almost double the levels of nearby German and Austrian regions. The 2023 agreement on cross-border telework reflects this interconnectedness, extending labour market flexibility across borders.

Further insights can be gained from property prices and digital infrastructure. Housing is far more expensive in Switzerland than in Germany, which reinforces cross-border mobility for residence and employment. Similarly, disparities in internet speed mirror broader urban-rural divides, with urban centres having faster connections than rural Alpine areas. Together, these patterns demonstrate the close link between prosperity, mobility and spatial contrasts in this highly dynamic border region.

## 2.3 Green dimension

The green dimension highlights the environmental characteristics, vulnerabilities and sustainability-related interactions within the border region. The analysis provides insight into the environmental interdependence of border regions. Additionally, the spatial distribution of renewable and conventional energy infrastructure, alongside indicators of resources and the circular economy, reveals whether the border facilitates collaborative transitions towards sustainability.

### 2.3.1 Nature protection and pollution

This sub-dimension investigates cross-border functional links in protected areas and areas affected by air and water pollution. It analyses the presence of protected areas in order to identify cross-border ecological links and conservation efforts. It also highlights the extent to which air and water pollution affects people living in border regions.

### 2.3.1.1 Protected areas

#### Indicator description

The indicator shows the presence and territorial coverage of protected areas based on the combination of 3 data sources, i.e., Nationally designated areas, Natura 2000 Network and Emerald Network.

- **Source/method of retrieval:** The indicator represents a combination of nationally designated areas, Natura 2000 and Emerald network – all data is provided by EEA (European Environment Agency) Geospatial data catalogue. As the EU Habitats' and Birds' directives do not apply for Switzerland, the Natura 2000 category is only relevant for the German, Austrian and Liechtenstein side.
- **Temporal coverage:** 2024
- **Unit:** n/a

Please refer to the technical annex for more information.

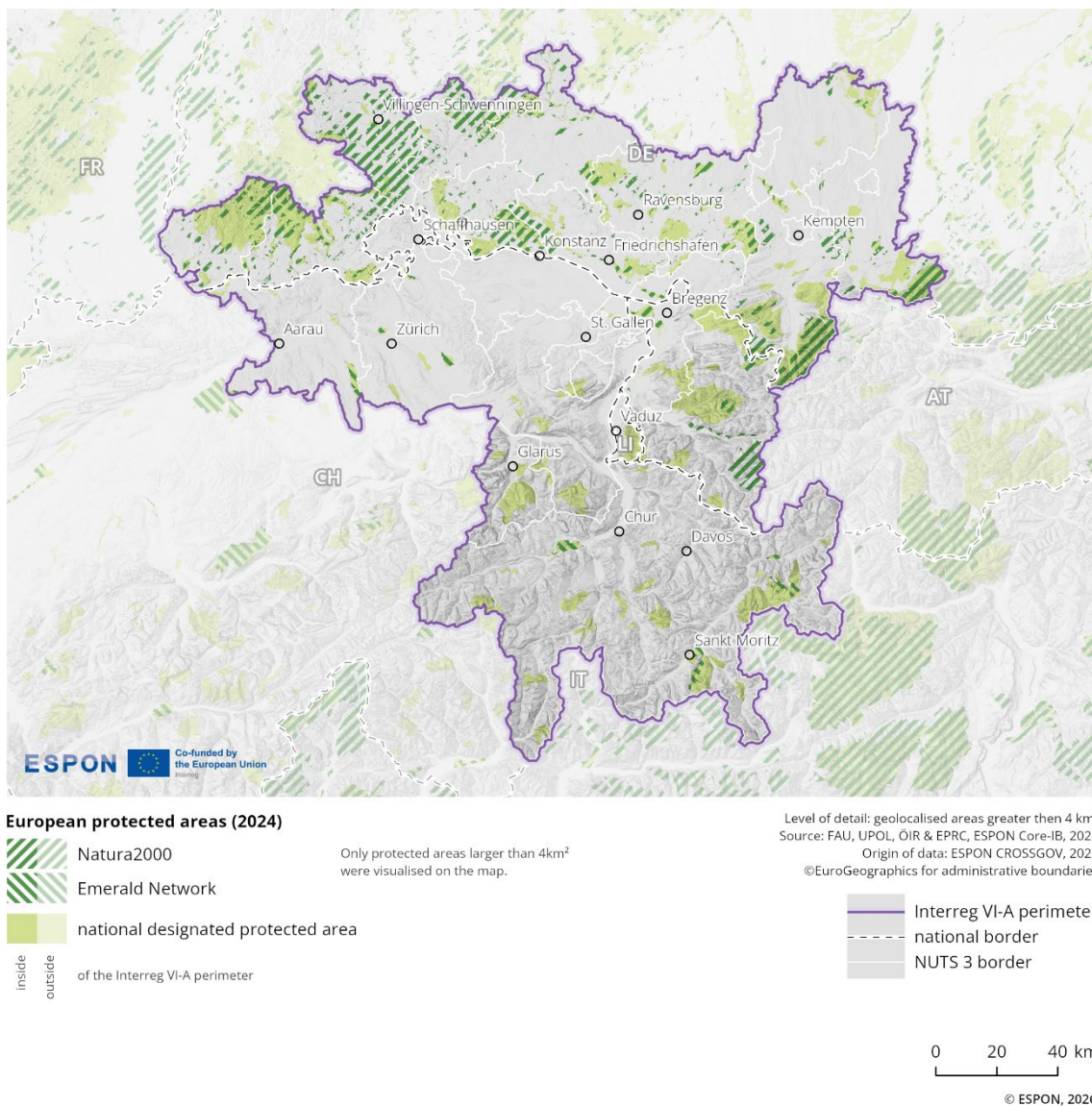
Figure 2.19 illustrates the distribution of protected areas in 2024 across the border region. The data differentiate between Natura 2000 sites, the Emerald Network, and nationally designated protected areas, with only protected areas larger than 4 km<sup>2</sup> displayed.<sup>10</sup>

Protected areas in the Germany–Austria–Switzerland–Liechtenstein border region are mainly concentrated in the northern alpine part of the Interreg region. The largest contiguous protected areas are located around Konstanz, where Natura2000 and nationally designated protected areas frequently overlap. Along the northern border, smaller and more fragmented areas are found near Schaffhausen, Ravensburg, and Kempten. Based on the EEA database, only one protected area extends continuously cross-border: the Nagelfluhkette Nature Park between Germany and Austria. In contrast, some areas, particularly along the German-Swiss border, lack corresponding protected areas on the Swiss side. Many smaller protected areas can be found in Switzerland and Liechtenstein around Vaduz, Glarus, Zürich and Sankt Moritz. The Swiss National Park in the Engadin and Münstertal in the Canton of Graubünden, for example, was the first national park in the Alps and in Central Europe. Together with the Biosfera Val Müstair Nature Park and several other municipalities, it forms a UNESCO Biosphere Reserve called Engiadina Val Müstair<sup>11</sup>. Larger protected areas also appear just outside the Interreg region, especially to the east and south.

<sup>10</sup> More detailed information on individual areas of the Natura 2000 network can be found on the following website: <https://natura2000.eea.europa.eu/>

<sup>11</sup> See also, <https://www.bafu.admin.ch/de/ch-nationalpark>; <https://nationalpark.ch/en/>

**Figure 2.19: Nature protected areas**



### 2.3.1.2 Air pollution

#### Indicator description

The indicator shows the air pollution from fine particulates (PM<sub>2.5</sub>) at NUTS3 level. The data shows the population-weighted average air pollution level (µg/m<sup>3</sup>), providing an indication of the extent to which the regional population is affected by air pollution.

- **Source/method of retrieval:** Processing and analysis of European Environment Agency data
- **Temporal coverage:** 2022
- **Unit:** Population weighted average of µg/m<sup>3</sup>

Please refer to the technical annex for more information.

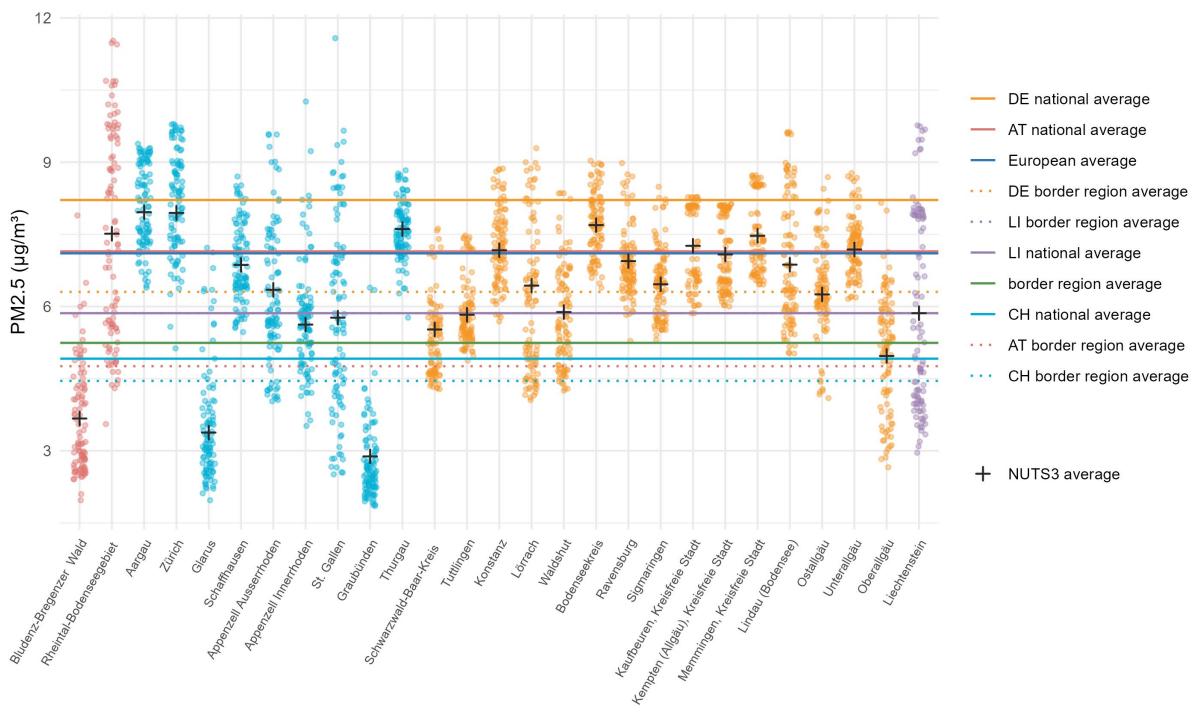
Figure 2.20 illustrates PM2.5 concentrations (in  $\mu\text{g}/\text{m}^3$ ) across NUTS3 regions in Germany, Austria, Switzerland and Liechtenstein in the Alpenrhein-Bodensee-Hochrhein border region. Each small dot represents an individual measurement, while the black crosses indicate the average PM2.5 concentration for each NUTS3 region<sup>12</sup>. The regions are aligned along the x-axis, with Austrian regions in red (on the left), German regions in orange, Swiss regions in blue and Liechtenstein in purple (on the right)

PM2.5 values across all 4 countries cover a wide range. PM2.5 concentrations rarely exceed 9  $\mu\text{g}/\text{m}^3$ . The national average is highest in Germany, followed by Austria, then Liechtenstein, while Switzerland has the lowest national average.

In general, the national average of each country is higher than the corresponding border region average. This difference is particularly notable between Austria's national average and its border region average.

The European average is almost aligned with Austria's national average, and therefore higher than all other PM2.5 values, except for the German national average. The cross-border average is situated between the national averages of Liechtenstein and Switzerland. It reflects the lower border region averages of Austria and Switzerland, as well as the higher values observed in the German and Liechtenstein border regions.

**Figure 2.20: Air pollution**



<sup>12</sup> See Eurostat Statistical Atlas for NUTS3 (2021) regions: <https://ec.europa.eu/statistical-atlas/viewer/?config=typologies.json&ch=NUTS&mids=BKGCNT.NUTS2021L3.CNTOVL&o=1.1.0.7&center=49.69576,14.33324&lcis=NUTS2021L3&>

### 2.3.1.3 Water pollution

#### Indicator description

The indicator shows the ecological status or potential for coastal and river water bodies. It is based on an assessment of biological, hydro-morphological, chemical and physico-chemical quality elements.

- **Source/method of retrieval:** Processing and analysis of European Environment Agency data
- **Temporal coverage:** 2022 (supplemented by 2016 data)
- **Unit:** n/a

Please refer to the technical annex for more information.

Figure 2.21 illustrates water pollution levels of Switzerland, Germany, and Austria within the Alpenrhein-Bodensee-Hochrhein interreg region in 2022. Water quality is represented using 6 colour-coded categories, ranging from "bad" to "high", including an "unknown" category<sup>13</sup>.

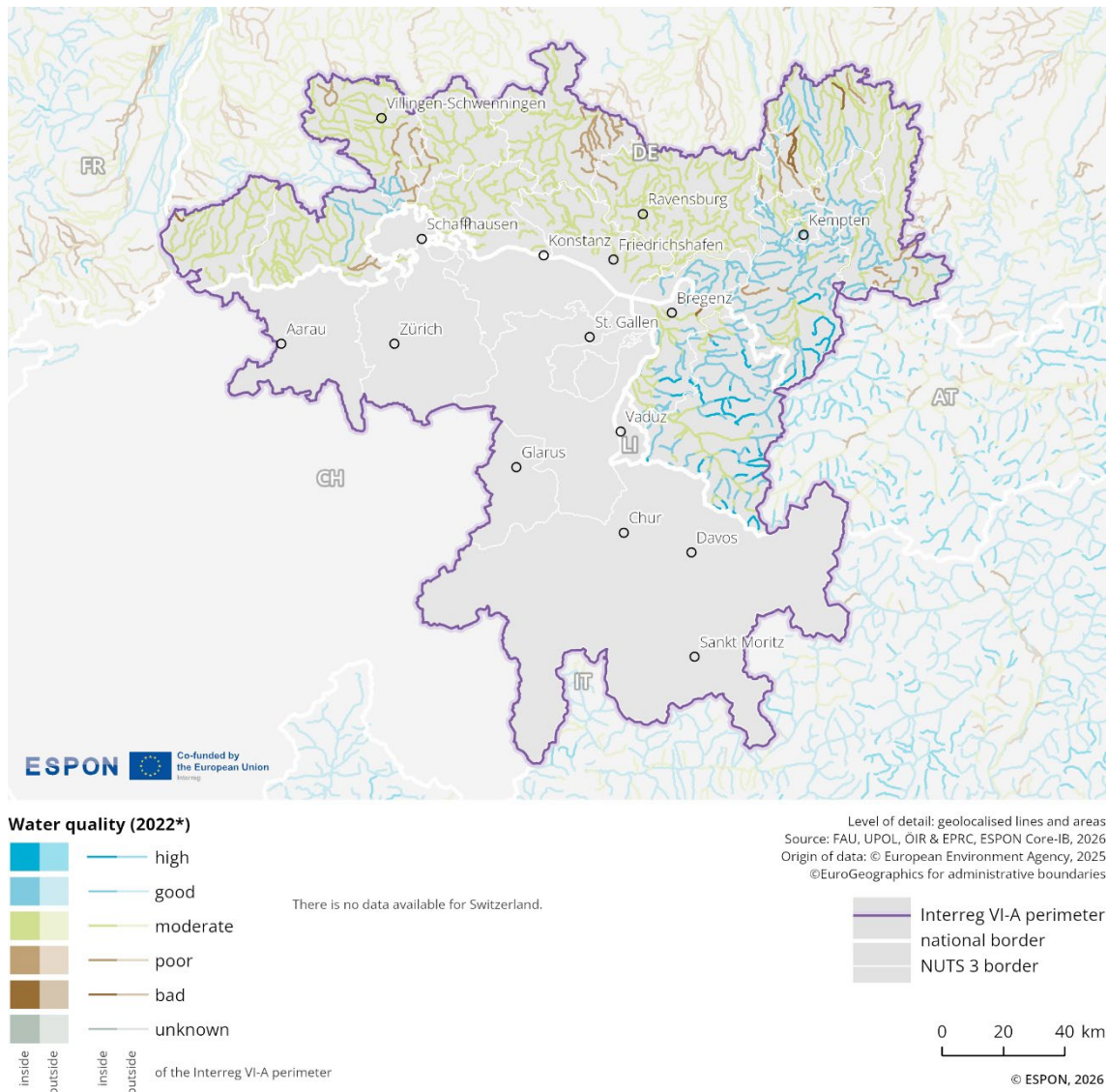
In the Swiss part of the Interreg region the rivers are classified as "unknown", which limits the reliability of the data due to missing information.

In the German part of this Interreg region the water bodies are predominantly rated as "moderate", with rivers in the east near Kempten, that are largely rated as "high" or "good". A few short stretches are classified as "poor" or "bad".

In the Austrian part of the Interreg region, rivers close to the border with Switzerland and Liechtenstein are mostly rated as "high" or "good". A smaller number of stretches are classified as "moderate".

<sup>13</sup> For more information see the Water Framework Directive Reporting Guidance (2022): [https://cdr.eionet.europa.eu/help/WFD/WFD\\_715\\_2022](https://cdr.eionet.europa.eu/help/WFD/WFD_715_2022)

**Figure 2.21: Water quality patterns**



## 2.3.2 Climate risks and resilience

This sub-dimension examines cross-border functional links relating to climate risks and resilience. It analyses exposure to natural hazards such as landslides, earthquakes, droughts and floods in order to identify vulnerabilities and risks.<sup>14</sup>

### 2.3.2.1 Natural hazard risks

#### Indicator description

The indicator shows the risk the border region is facing in relation to natural hazards (floods, droughts, landslides and earthquakes). The map highlights potential cross-border affectedness and allows to judge the relative relevance of each risk for the cross-border region.

- **Source/method of retrieval:** The indicator is based on geodata from the Disaster Management Risk Knowledge Centre/JRC. It provides the likelihood of specific natural hazard events at grid level.
- **Temporal coverage:** 2024
- **Unit:** n/a

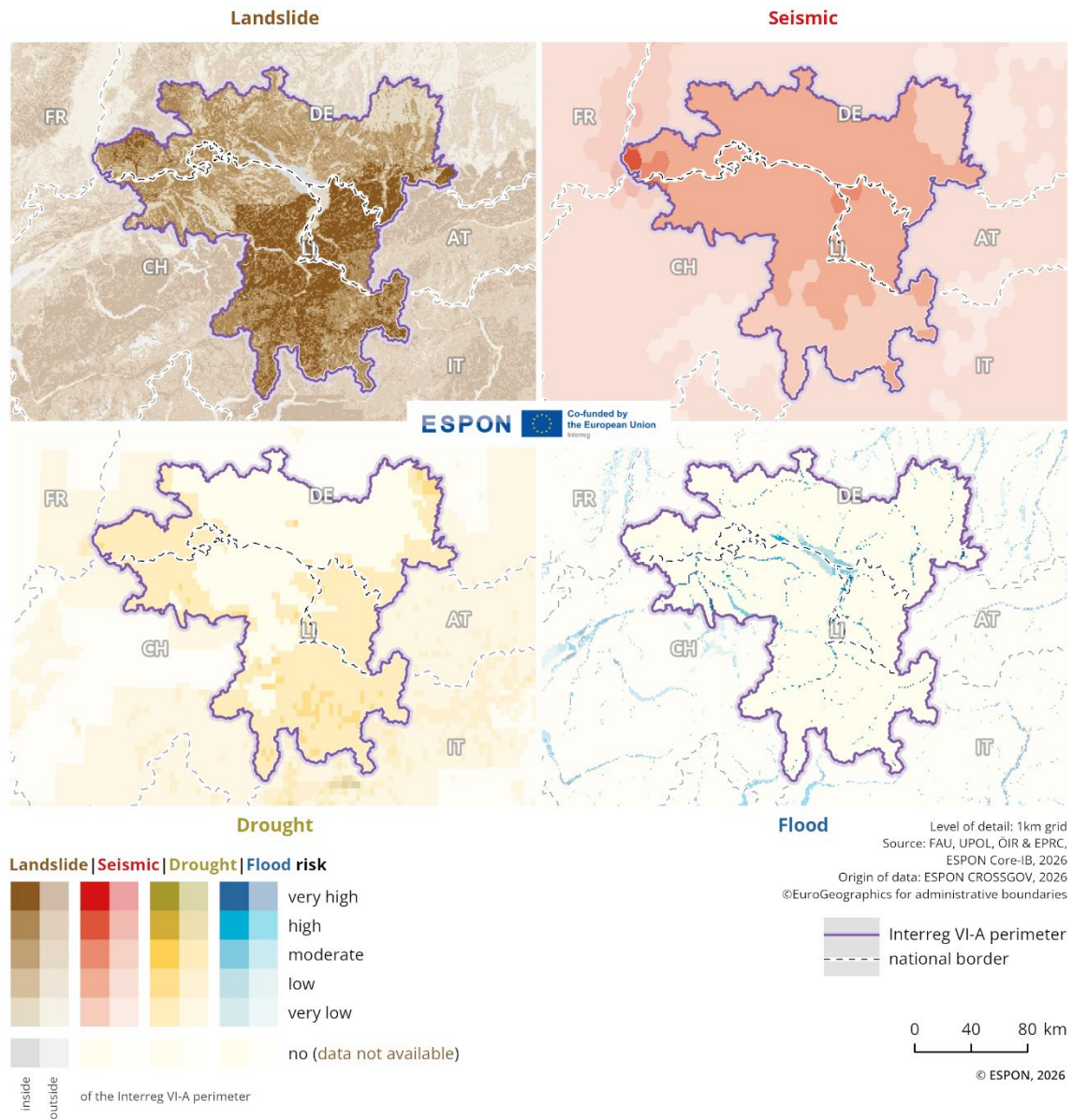
Please refer to the technical annex for more information.

Figure 2.22 illustrates the spatial distribution of natural hazards in the Alpenrhein-Bodensee-Hochrhein region, highlighting areas where risks are shared across national boundaries and where risks are not necessarily cross-border relevant.

Landslides are a major concern for the region, as large parts are located within the Alps. The risk is highest in the south, mainly spanning across the borders of Switzerland, Liechtenstein and Austria. The risk of landslides on the German side and northern part of Switzerland can be described as moderate. The drought risk can be described as low and equally distributed across the region. Seismic activities are also low, except in the border triangle of Germany, Switzerland and France (which is not part of the region), located in the very west of the region. Flooding risk is not really widespread and is mostly located around Lake Constance, which forms the border between Germany, Austria and Switzerland.

<sup>14</sup> See also: European Commission 2024: Strengthening the Resilience of EU Border Regions, [https://ec.europa.eu/regional\\_policy/sources/studies/KN-02-24-586-2A-N.pdf](https://ec.europa.eu/regional_policy/sources/studies/KN-02-24-586-2A-N.pdf)

**Figure 2.22: Natural hazard risks**



### 2.3.3 (Renewable) Energy and energy infrastructure

This sub-dimension assesses cross-border functional links in energy supply and infrastructure, focusing on existing connections and missing links. The distribution of power lines, energy infrastructure and power stations is analysed to identify supply patterns and potential integration gaps. The analysis reveals whether the border facilitates energy cooperation and connectivity, or if infrastructural differences create barriers.<sup>15</sup>

#### 2.3.3.1 Power lines and energy infrastructure

##### Indicator description

The indicator shows the distribution of power lines and energy infrastructures in the cross-border region. The geodata highlights the existing links and gaps in the cross-border interconnections of the energy transmission network.

- **Source/method of retrieval:** Geodata on high-voltage energy infrastructure (100 kV and above) has been collected and processed from OpenStreetMap.
- **Temporal coverage:** 2025
- **Unit:** kV

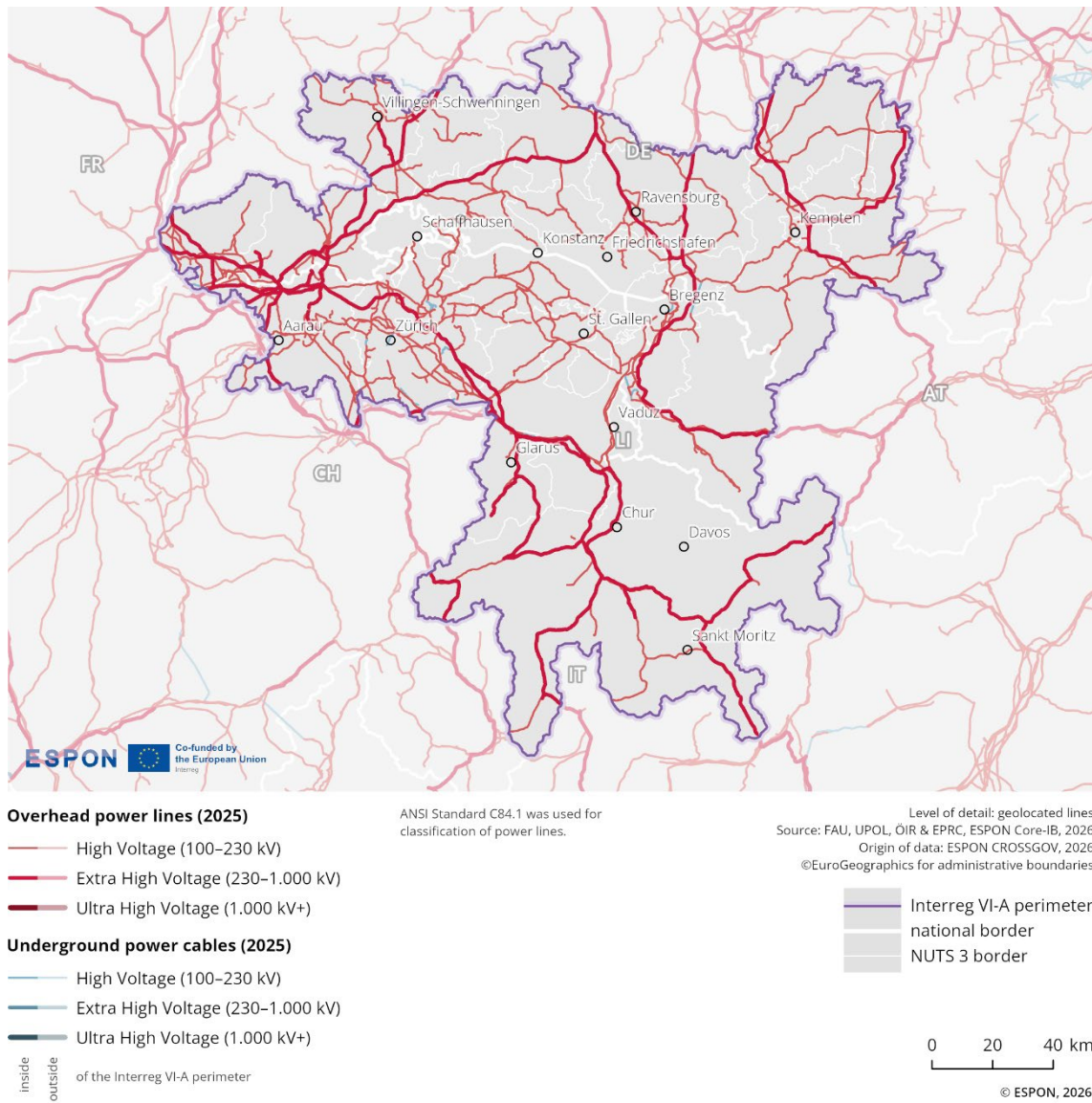
Please refer to the technical annex for more information.

Figure 2.23 illustrates the distribution of power lines and cables in 2025 across the border region. The data distinguish between overhead and underground power lines, further classified into high-voltage (100-230 kV), extra high-voltage (230-1,000 kV), and ultra-high voltage (above 1,000 kV).

In the cross-border region of Germany-Austria-Switzerland-Liechtenstein, the most dense extra- and high-voltage infrastructure concentrates in the northern half of the area, notably around Zürich and Aarau (Switzerland) and bigger German cities. Although the southern part of the region does not have such a dense network (in terms of branching), important extra high-voltage power lines run through the Alpine valleys, heading towards both Italy and Austria. According to the data set, no extra-high (or even high-) voltage lines pass through Liechtenstein itself. These follow the Swiss-Liechtenstein border and the local grid is connected with them. Important cross-border connections for extra high-voltage power lines are located between Germany and Austria, and then at several points (3 main nodes identified) between Switzerland and Germany across the Rhine River northwest of Zürich.

<sup>15</sup> See also: European Commission 2025: Handbook on Cross-border Energy Communities, [https://ec.europa.eu/regional\\_policy/sources/studies/2025/Handbook\\_on\\_Cross-border\\_Energy\\_Communities.pdf](https://ec.europa.eu/regional_policy/sources/studies/2025/Handbook_on_Cross-border_Energy_Communities.pdf)

**Figure 2.23: High-voltage transmission infrastructure**



### 2.3.3.2 Power stations

#### Indicator description

The indicator shows the location of power stations by type and energy production levels (coal, gas and oil, nuclear, hydro). It can indicate differences and complementarities in the national energy supply systems as well as highlight potential supply-demand links when viewed in conjunction with power lines infrastructure.

- **Source:** OpenStreetMap, Global Energy Monitor, JRC Hydro-power plants database
- **Temporal coverage:** 2025
- **Unit:** MW

Please refer to the technical annex for more information.

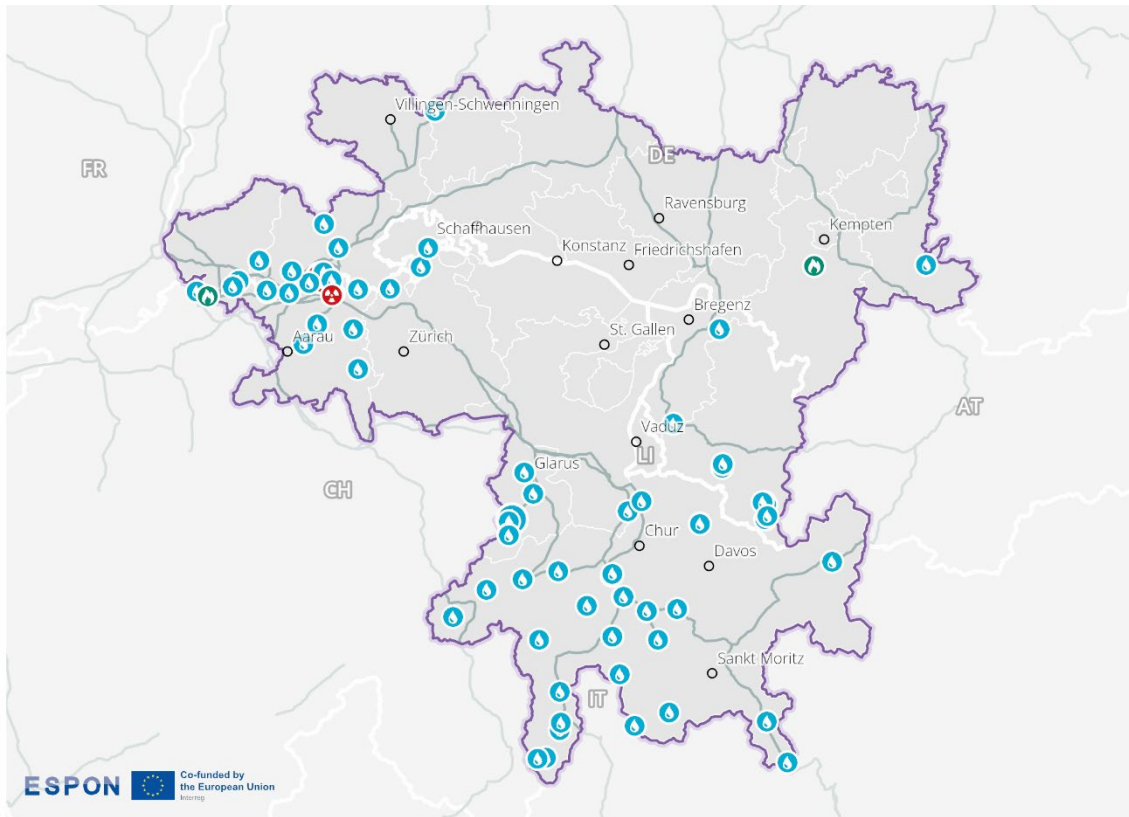
In the Germany-Austria-Switzerland-Liechtenstein cross-border region, in total, there are 78 locations with power stations and the majority is represented by hydroelectric ones (see Table 1).

**Table 1: Number and type of power stations**







Power stations/plants	Less than 1GW	1GW and up
Nuclear	1	1
Coal	/	/
Gas and oil	2	/
Hydro	73	1

Based on their location, 9 hydroelectric power stations are located in Austria, 11 are located solely in Germany, and the twelfth (Rheinfelden) is shared with Switzerland (see Figure 2.24). Finally, the remaining 54 hydroelectric power stations are located in Switzerland. The only 2 oil and gas power stations in the region are located in Germany (south of Kempten and in the far west on the border with Switzerland, close to Basel). There are 2 nuclear power plants in operation, both in Switzerland, northwest from Zürich on the river Rhein and Aare. No coal power stations are located in the whole region.

**Figure 2.24: Power stations infrastructure**



**Power stations (2025)**

-  nuclear
-  coal
-  gas and oil (greater than 20MW)
-  hydro (greater than 20MW)
-  ≥ 1GW
-  < 1GW

**Power lines and cables (2025)**

-  ≥ 230kV
-  inside of the Interreg VI-A perimeter
-  outside of the Interreg VI-A perimeter

Level of detail: geolocalised point and linear features  
 Source: FAU, UPOL, ÖIR & EPRC, ESPON Core-IB, 2026  
 Origin of data: ESPON CROSSGOV, 2026  
 ©EuroGeographics for administrative boundaries

-  Interreg VI-A perimeter
-  national border
-  NUTS 3 border



© ESPON, 2026

### 2.3.4 Resources and circular economy

This sub-dimension focuses on resource use patterns in the border region and their implications for circular economy practices. It analyses resource productivity and waste generation in order to evaluate the efficiency and sustainability of resource utilisation across the border.

#### 2.3.4.1 Resource productivity

##### Indicator description

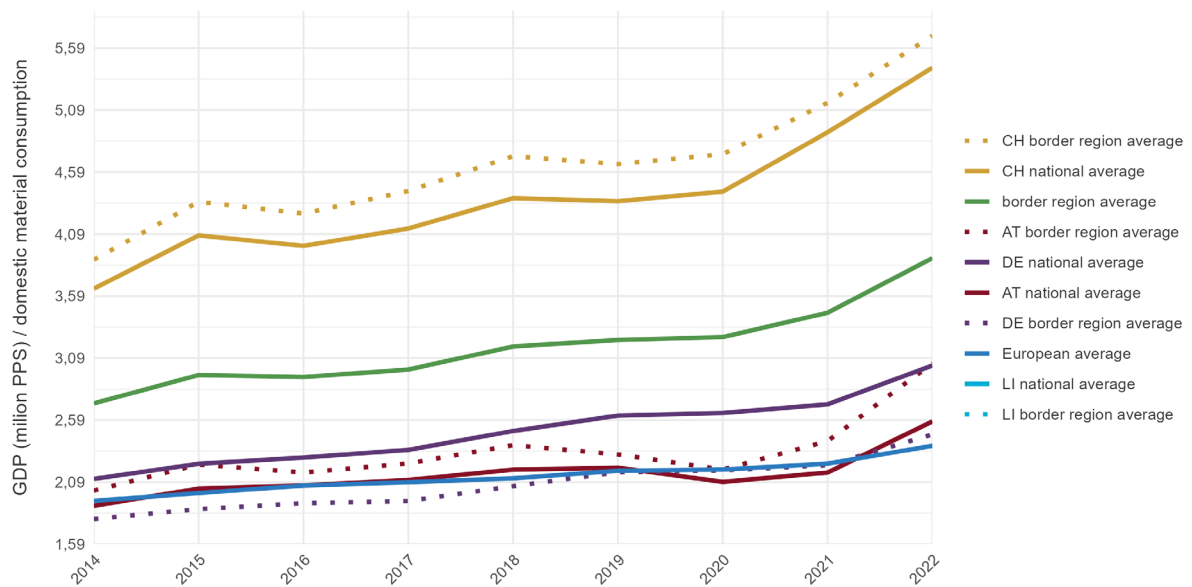
The indicator shows the economic value generated per unit of material consumed for each region within the cross-border area. Developments over time provide insights if the decoupling of productivity from resource use is progressing on regional level.

- **Source/method of retrieval:** Processing of Eurostat and ESPON CIRCTER (Circular Economy and Territorial Consequences) Update data
- **Temporal coverage:** 2014-2022
- **Unit:** PPS/tons

Please refer to the technical annex for more information.

Figure 2.25 illustrates the development of GDP per unit of domestic material consumption in million PPS/DMC (purchasing power standards per domestic material consumption) between 2014 and 2022. The data compare the national averages, the averages of their respective border regions, and the overall border regional average with the European average.

**Figure 2.25: Resource productivity**



The Swiss national average of resource productivity shows an increase over the period from approximately 3.59 in 2014 to over 5.09 million PPS/DMC in 2022. The Swiss border region average follows a similar trend but is slightly higher, reaching around 5.59 million PPS/DMC in 2022. Both the

Austrian and German national averages, as well as their respective border region averages, show an increasing trend, but at a significantly lower level.

The European average lies notably below the national averages of Switzerland and Germany, as well as below the border regional average, but is almost aligned with the Austrian national average. The border region average, representing the combined average of the 3 countries' border regions, is significantly lower than the Swiss values but higher than the Austrian and German values. However, notable disparities exist within the border region itself.

### 2.3.4.2 Generation of waste per GDP

#### Indicator description

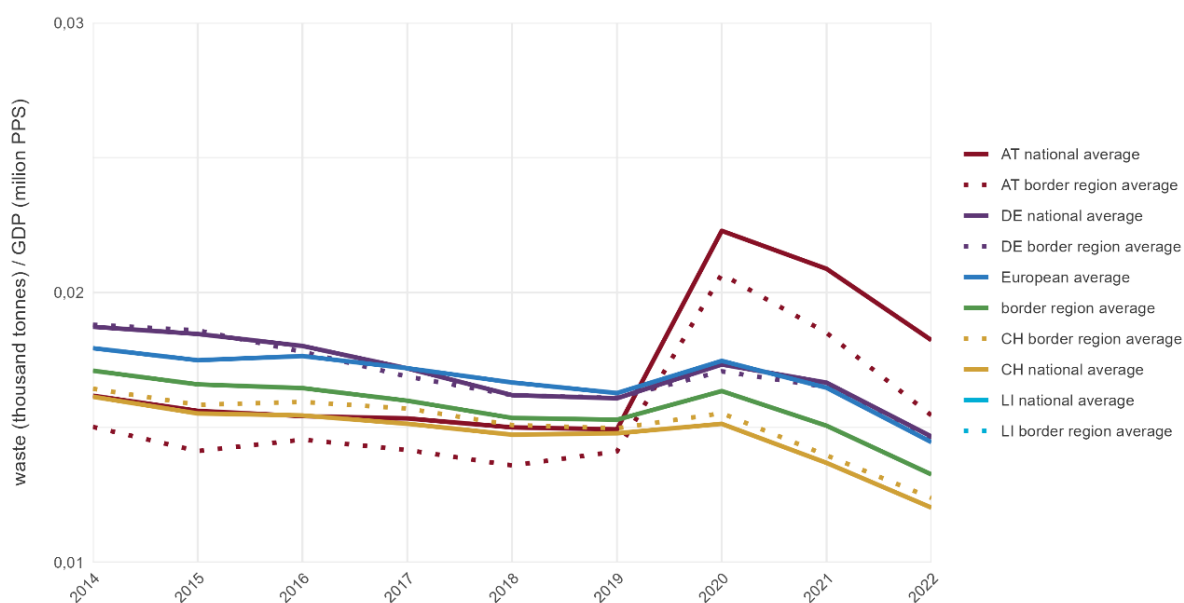
The indicator shows the regional distribution of waste creation in relation to the GDP development. Comparing waste generated to GDP reflects the waste intensity of the economy and provides a measure of “eco-efficiency”. Observation of its change from year to year permits to assess whether the economy is able to produce more wealth while at same time generating less waste.

- **Source/method of retrieval:** Processing of Eurostat and ESPON CIRCTER Update data
- **Temporal coverage:** 2014-2022
- **Unit:** Tons/PPS

Please refer to the technical annex for more information.

Figure 2.26 illustrates the trend in waste generation relative to economic output, measured in tonnes of waste per million PPS (purchasing power standards) of GDP from 2014 to 2022 in the Alpenrhein-Bodensee-Hochrhein area (Germany-Austria-Switzerland-Liechtenstein).

**Figure 2.26: Waste generation per GDP**



The Austrian national and border averages both decrease slightly until 2019, then rise sharply in 2020 (peaking at over 0.025 tonnes of waste per million PPS), and decline again afterwards. Throughout the period, the Austrian border average remains consistently below the national average. The German and Swiss national and border averages follow a consistent downward trend, with the border averages always slightly above the national average in the Swiss case.

The European average decreases gradually from around 0.018 in 2014 to about 0.015 tonnes of waste per million PPS in 2022. The values for Switzerland and Liechtenstein remain below the European average throughout the period, while Germany's values are almost aligned with it.

Austria's values are below the European average until 2019, and rise significantly above it from 2020 onward.

The combined border regional average starts around 0.017 in 2014, then follows a slight downward trend until 2019, with a temporary increase in 2020, then declines again to below 0.015 tonnes of waste per million PPS in 2022. It stays between the higher values of Austria and Germany and the lower values of Switzerland and Liechtenstein. Throughout the entire period, the cross-border average lies slightly below the European average.

### 2.3.5 Key messages on the green dimension

The border region is shaped by its Alpine setting, which has a strong influence on environmental protection and energy use. Based on the EEA database, protected areas are concentrated in the northern Alpine regions, with large contiguous zones around Lake Constance and more fragmented sites near Schaffhausen, Ravensburg and Kempten. In Switzerland and Liechtenstein, smaller protected areas are scattered around Vaduz, Zürich and St. Moritz. Cross-border continuity is limited, illustrating the fragmented governance of natural assets; the Nagelfluhkette Nature Park between Germany and Austria extends across a national border and thus represents a notable example of cross-border nature conservation.

Environmental quality is generally high, as reflected in low levels of PM<sub>2.5</sub> air pollution (in µg/m<sup>3</sup>) compared to European averages. Switzerland in particular records the lowest concentrations, while German regions are somewhat higher. These differences partly mirror settlement structures, industrial activity and cross-border commuting patterns, which channel traffic and emissions into certain corridors. Natural risks add another layer of complexity. Landslides are a common concern in Alpine valleys spanning Switzerland, Austria and Liechtenstein, while flood risks are localised around Lake Constance.

Energy and resource use further illustrate interconnections. Hydropower is the dominant source, with more than 70 stations, most of which are in Switzerland, but several are also located on rivers that form national borders. Large extra-high-voltage lines connect Germany, Austria and Switzerland, while Liechtenstein relies on cross-border links. Only Switzerland has nuclear power stations in the border area, while there are no coal plants. This reliance on mostly clean energy sources is directly linked to relatively high levels of resource productivity, particularly in Switzerland, and lower waste generation per GDP compared with European averages.

At the same time, however, there are still differences between individual countries. While Austria shows higher levels of waste generation, Switzerland consistently outperforms with regard to resource productivity. These contrasts show that having a common geography does not automatically lead to harmonised outcomes. Instead, the region's main characteristics stem from the interaction between Alpine landscapes, energy infrastructures, and resource management practices.

## 2.4 Socio-economic dimension

The socio-economic dimension examines patterns of social integration, tourism, and access to public services in the border region. It identifies how socio-cultural links, visitor flows and essential services influence development in the cross-border area. By examining interpersonal interactions via social media, language similarities, tourism intensity, and the accessibility of facilities such as secondary schools, grocery shops, hospitals, doctors, pharmacies and cinemas this dimension highlights both functional integration and potential socio-spatial differences.

### 2.4.1 Social integration

This sub-dimension evaluates the level of social integration in the border region by identifying areas with low or high cross-border interactions. It analyses social interactions and language similarities across and along national borders to evaluate the potential for cultural and social integration.

#### 2.4.1.1 Cross-border connectivity in social media

##### Indicator description

The indicator refers to the existing connections between users of META social media (in particular Facebook across the border. It aims at giving an overview of the degree of personal connectivity between inhabitants of the border area. Even though not all these internet connections will relate to real communication exchanges but sometimes just “following” content from other users, they give an overview of interpersonal and cultural knowledge of the social media landscape from across the border.

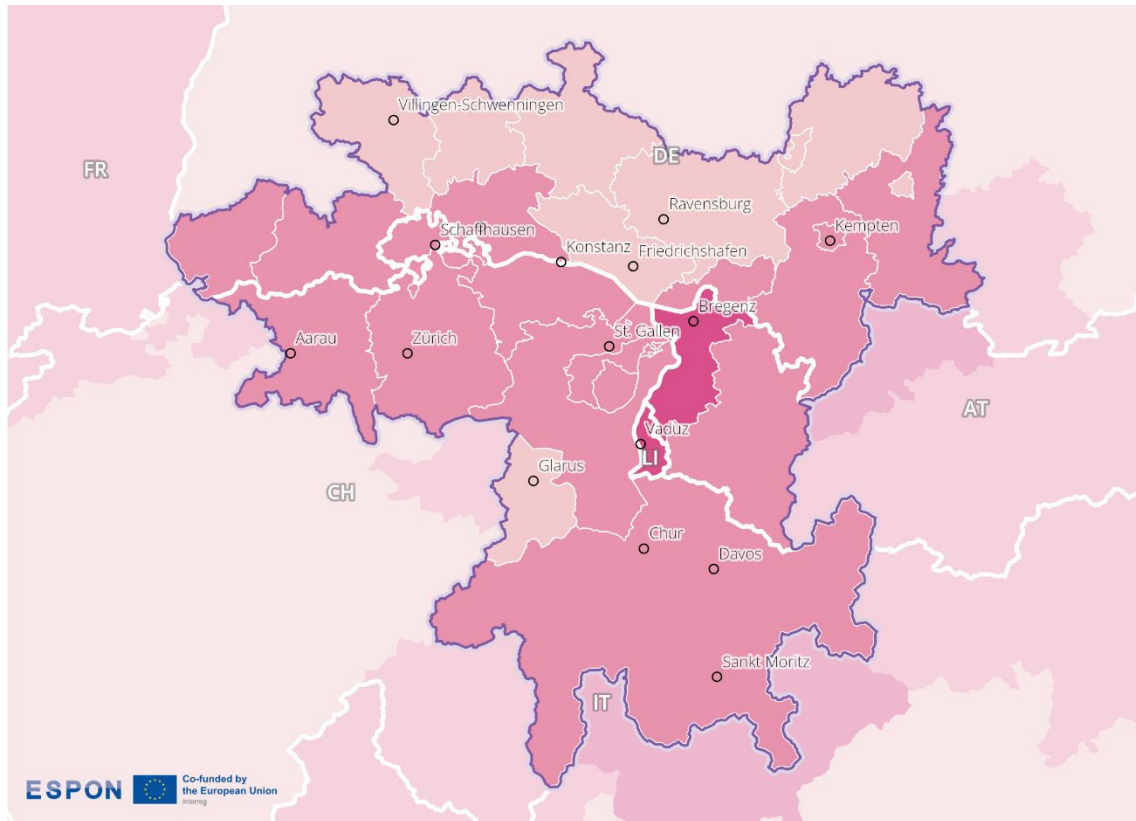
- **Source/method of retrieval:** Processing Facebook data on existing connections across the border (data for Good Meta)
- **Temporal coverage:** 2021
- **Unit:** n/a

Please refer to the technical annex for more information.

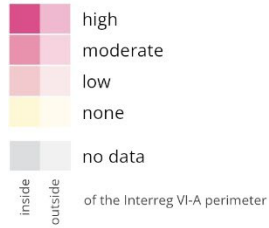
Figure 2.27 illustrates the spatial distribution of cross-border connectivity based on Facebook information in the border area. The different shades of pink indicate varying intensities of connectivity, ranging from low to high, with darker tones representing stronger intensity of cross-border connectivity in social media.

Almost all Swiss parts of the region exhibit moderate cross-border connectivity (including cities such as Aarau, Zürich, Davos, and St. Moritz), with the exception of the NUTS3 unit around Glarus, where the cross-border connectivity in social media is low. High interaction cross-border connectivity is observed in Liechtenstein and in the western NUTS3 unit of the Austrian part of the region, while the remaining Austrian areas display moderate levels. In the German part of the border region, moderate cross-border connectivity is recorded in the west (in areas near the Swiss city of Schaffhausen) and in the east (around Kempten), whereas the central German section (the wider surroundings of Ravensburg) shows low cross-border connectivity.

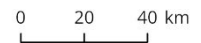
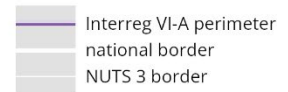
**Figure 2.27: Cross-border connectivity in social media**



**Intensity of cross-border connectivity based on META data (2021)**



Level of detail: NUTS3  
Source: FAU, UPOL, OIR & EPRC, ESPON Core-IB, 2026  
Origin of data: ESPON CROSSGOV, 2026  
©EuroGeographics for administrative boundaries



© ESPON, 2026

### 2.4.1.2 Language similarities along national borders

#### Indicator description

The indicator specifies whether the language is the same across the border, whether the respective national languages have commonalities, whether while different, there are local linguistic commonalities, and whether the language is different.

- **Source/method of retrieval:** ESPON cross-border public services (CPS) 2.0 database along border segments
- **Temporal coverage:** 2022
- **Unit:** n/a

Please refer to the technical annex for more information.

Despite considerable regional variations in dialect, the majority of the programme area shares German as common language. The only exception to this is the Kanton Graubünden, where approximately 25% of the population are classified as speaking either Italian or Rhaeto-Romanic and both languages are considered as formal languages. Thus the language barrier throughout the programme area is limited, but nevertheless exists for some parts of it.

### 2.4.2 Tourism

This sub-dimension identifies key tourism hotspots in the border region to highlight tourism dynamics. It analyses the number of nights spent in tourist accommodation establishments in order to evaluate the attractiveness of, and developments in, the tourism sector. Comparisons with the respective countries and the EU average provide context for understanding the region's dynamics.

#### 2.4.2.1 Nights spent at tourist accommodation establishments

#### Indicator description

The indicator shows the number of nights a guest or tourist actually spends in a tourist accommodation establishment or non-rented accommodation (overnight stays). This may reveal the tourism attractiveness of a region and shed light on the role of tourism in the local economy, i.e., tourists/guests staying overnight may spend more in the region than one-day visitors.

- **Source:** Eurostat
- **Temporal coverage:** 2020-2023
- **Unit:** Nights per capita

Please refer to the technical annex for more information.

The spatial distribution of overnight stays highlights the importance of key tourist destinations in border areas. Tourism contributes significantly to regional income, infrastructure development and employment, and thereby supports regional prosperity. At the same time, it affects environmental and living conditions, which may reduce local acceptance despite its economic benefits. This is in particular the case in places of overtourism, seasonal pressures, and increasing land-use conflicts.

Figure 2.28 shows the number of overnight stays per capita at tourist accommodation establishments in 2023. It includes hotels, holiday and other short-stay accommodation, as well as campsites, caravan

and trailer parks. The map uses a colour gradient, with darker shades indicating a higher number of nights spent per capita in 2023. It also shows the cumulative number of overnight stays from 2020 to 2023.

A particularly high intensity of overnight stays is evident in the eastern parts of the programme area. The NUTS3 regions Graubünden and Bludenz-Bregenzener-Wald exceed 40 nights per capita in 2023<sup>16</sup>. On the German side, the NUTS3 regions Ostallgäu and Oberallgäu exceed 20 nights per capita.

In terms of total overnight stays over the 3-year period, the leading tourism regions are located in Switzerland and Austria: Graubünden (approx. 8.8 million), Zürich (approx. 6.8 million) and Bludenz-Bregenzener-Wald (approx. 6 million). The neighbouring German regions have slightly lower absolute figures (e.g., Oberallgäu, 5.3 million and Ostallgäu 3.3 million).

**Figure 2.28: Overnight stays in tourism**

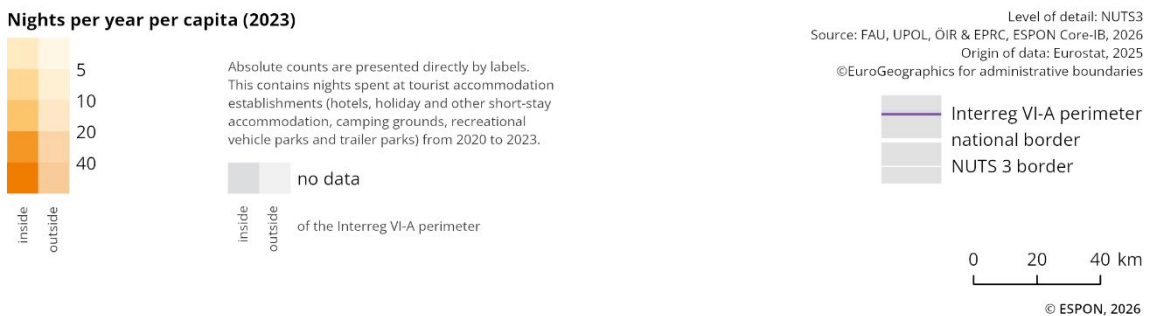
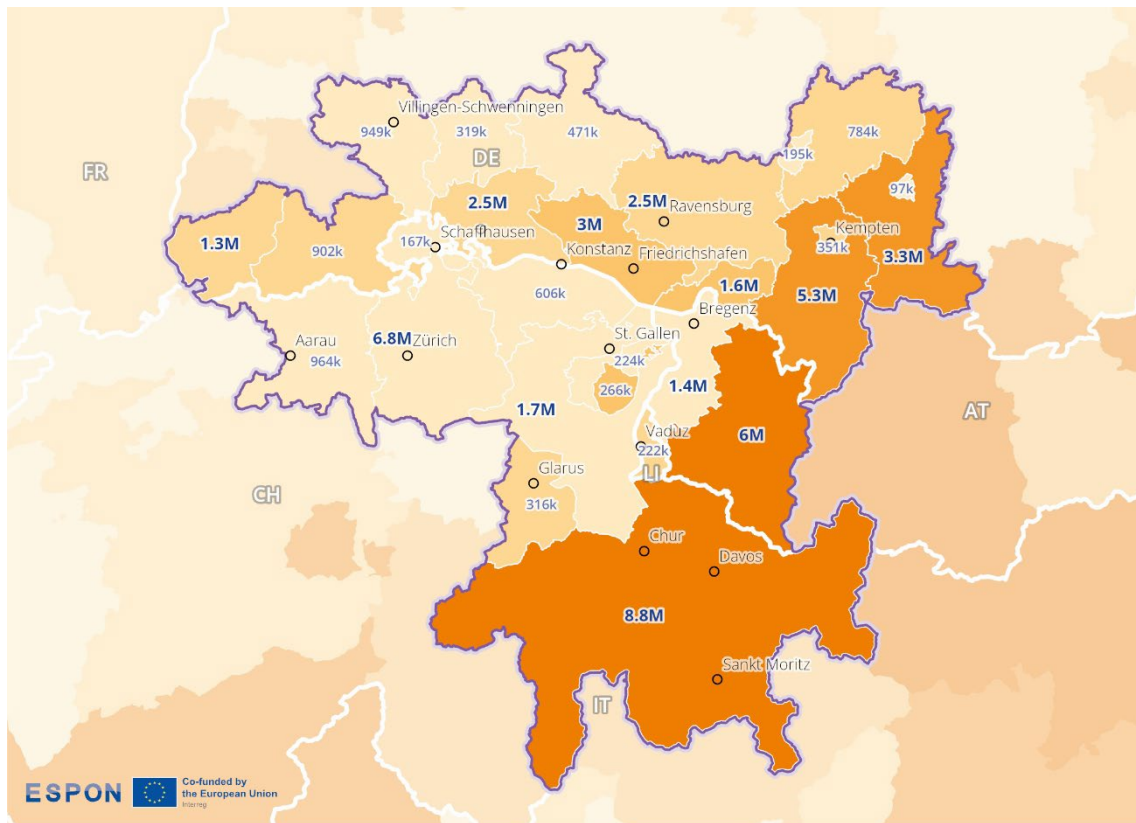


Figure 2.29 illustrates the development of nights spent at tourist establishments per thousand inhabitants from 2020 to 2023. Over the entire period, the average for the Germany-Austria-

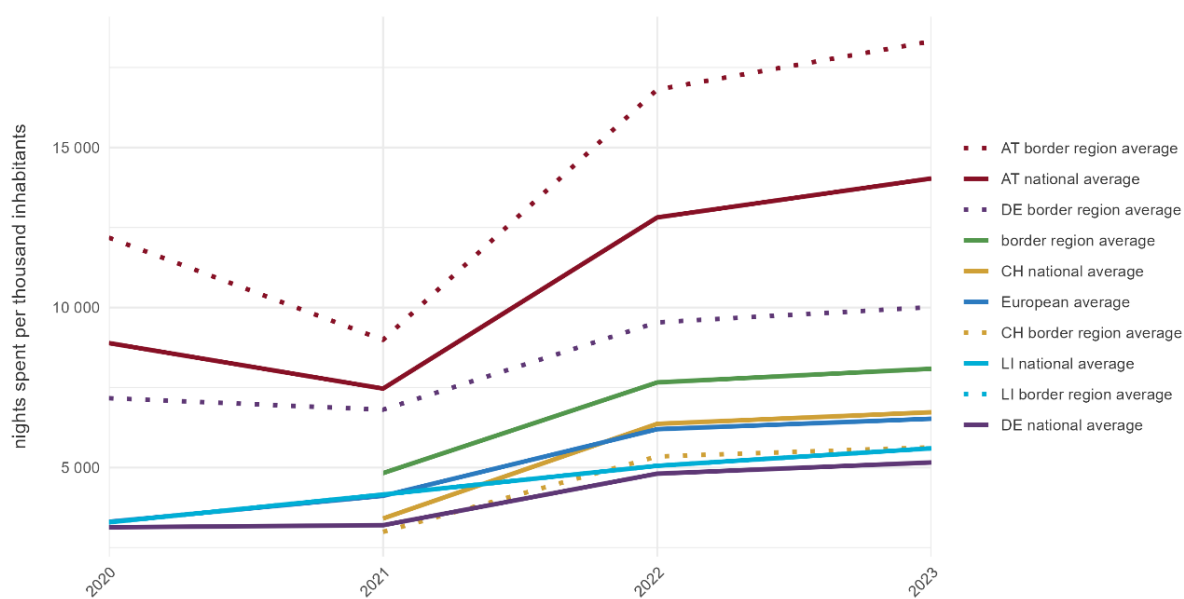
<sup>16</sup> See Eurostat Statistical Atlas for NUTS3 (2021) regions: <https://ec.europa.eu/statistical-atlas/viewer/?config=typologies.json&ch=NUTS&mids=BKGCNT.NUTS2021L3.CNTOVL&o=1.1.0.7&center=49.69576,14.33324&lcis=NUTS2021L3&>

Switzerland-Liechtenstein programme area is higher than the overall European average, which includes EU member states and the EFTA countries Iceland, Liechtenstein, Switzerland and Norway.

While the border regional averages in Austria and Germany are higher than the national average for all 4 years, the Swiss border regional average is lower than the national average. In the case of Liechtenstein, the border regional average is the same as the national average. Additionally, the regional averages for the Austrian and German border areas are higher than that for the Swiss and Liechtenstein throughout the given period.

Touristic patterns have a series of implications for spatial development on either side of the border. Transport infrastructure has to consider peak volumes and balancing recreating activities with socio-cultural as well as environmental heritage can be a challenge.

**Figure 2.29: Overnights in tourism (comparison)**



### 2.4.3 Services of general interest

This sub-dimension looks at how accessible services of general interest (SGIs) are in the border region, identifying areas that are well-served and those that are more difficult to access. It analyses access to essential services such as secondary schools, grocery shops, hospitals, doctors, pharmacies and cinemas.

#### 2.4.3.1 Accessibility to services of general interest

##### Indicator description

The indicator shows, for the below listed facilities and services, the average driving time to the nearest facility of a series of services of general interest.

- **Source/method of retrieval:** Processing and analysis of standardised travel-time accessibility to secondary schools, grocery shops, hospitals, doctors, pharmacies and cinemas available in the ESPON PROFECY Update (2022)
- **Temporal coverage:** 2021
- **Unit:** Minutes (in 2.5 x 2.5 km grid)

Please refer to the technical annex for more information.

Figures 2.30 to 2.35 visualise average car travel times to services of general interest within the programme area. The maps display accessibility to:

- › Secondary schools (Figure 2.30)
- › Grocery shops (Figure 2.31)
- › Hospitals (Figure 2.32)
- › Doctors (Figure 2.33)
- › Pharmacies (Figure 2.34)
- › Cinemas (Figure 2.35)

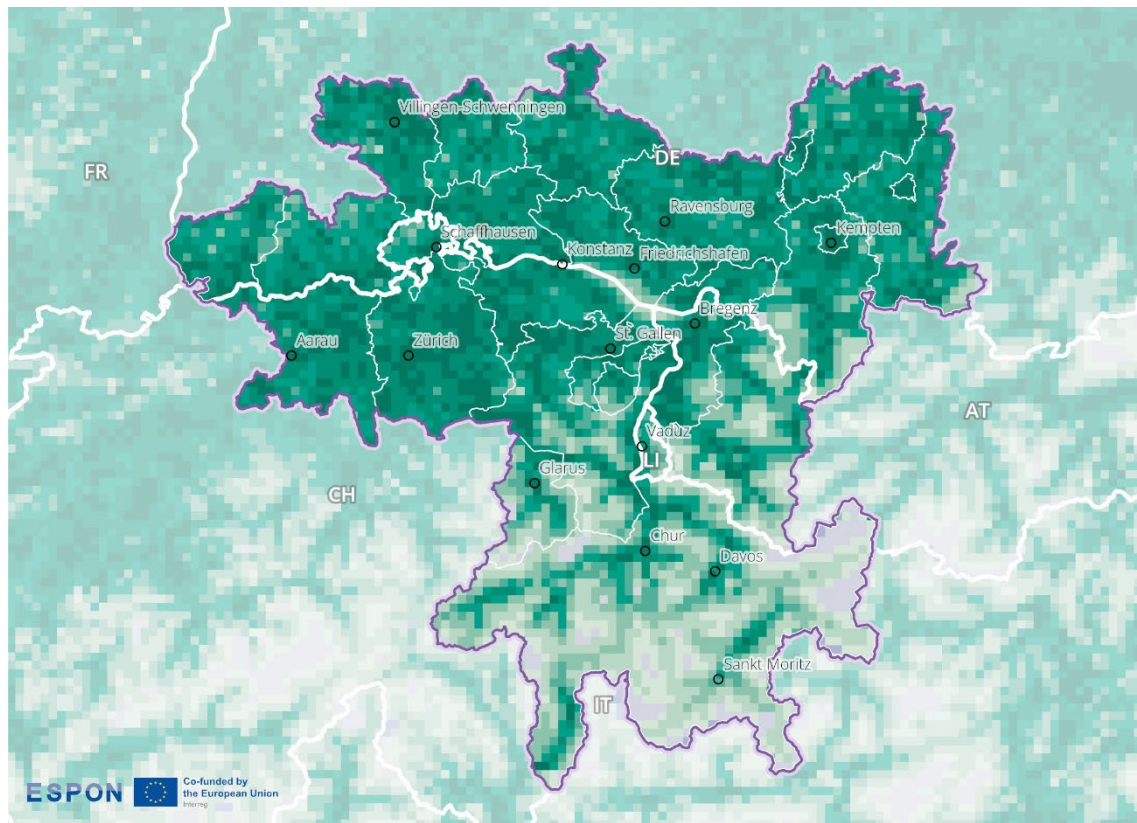
These indicators show how long, on average, it takes to reach the nearest facility by car. The data comes from the ESPON PROFECY Update project (2022) and is visualised based on a 2.5-kilometer grid.

In the Germany–Austria–Switzerland–Liechtenstein border area, essential services such as hospitals, doctors, pharmacies, schools, and grocery shops are evenly distributed across most German areas, ensuring generally good accessibility. In Swiss and Austrian regions, these services are mainly concentrated in the main valleys, which are also relatively well accessible.

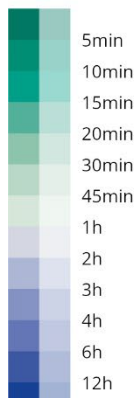
Nevertheless, the mountainous terrain along the border creates accessibility challenges. Some areas in the southeast of Switzerland and Austria are more difficult to access. Steep mountains hinder the construction and maintenance of transport infrastructure, leading to longer travel times to essential services in these regions.

As a cultural service, cinemas are primarily located in cities and more densely populated areas, which again results in shorter travel times in and near urban centres and longer ones in rural or remote areas.

**Figure 2.30: Travel time to secondary schools**



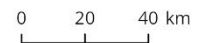
**Car travel time to the nearest secondary school (2021)**



inside  
outside  
of the Interreg VI-A perimeter

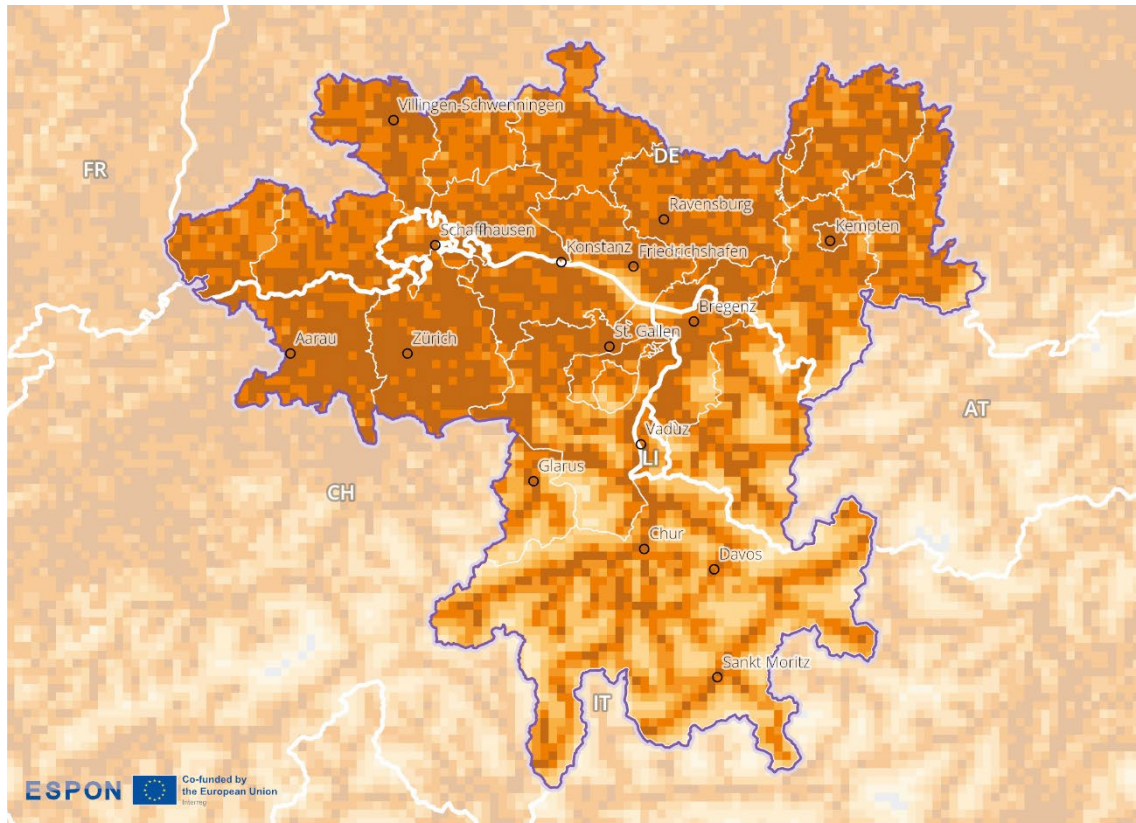
Level of detail: 2.5km grid  
Source: FAU, UPOL, ÖIR & EPRC, ESPON Core-IB, 2026  
Origin of data: ESPON PROCECY Update, 2022  
©EuroGeographics for administrative boundaries

Interreg VI-A perimeter  
national border  
NUTS 3 border

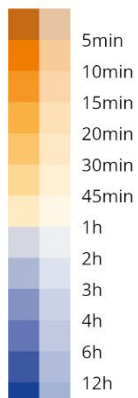


© ESPON, 2026

**Figure 2.31: Travel time to grocery shops**



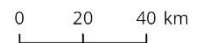
**Car travel time to the nearest shop (2021)**



inside  
outside  
of the Interreg VI-A perimeter

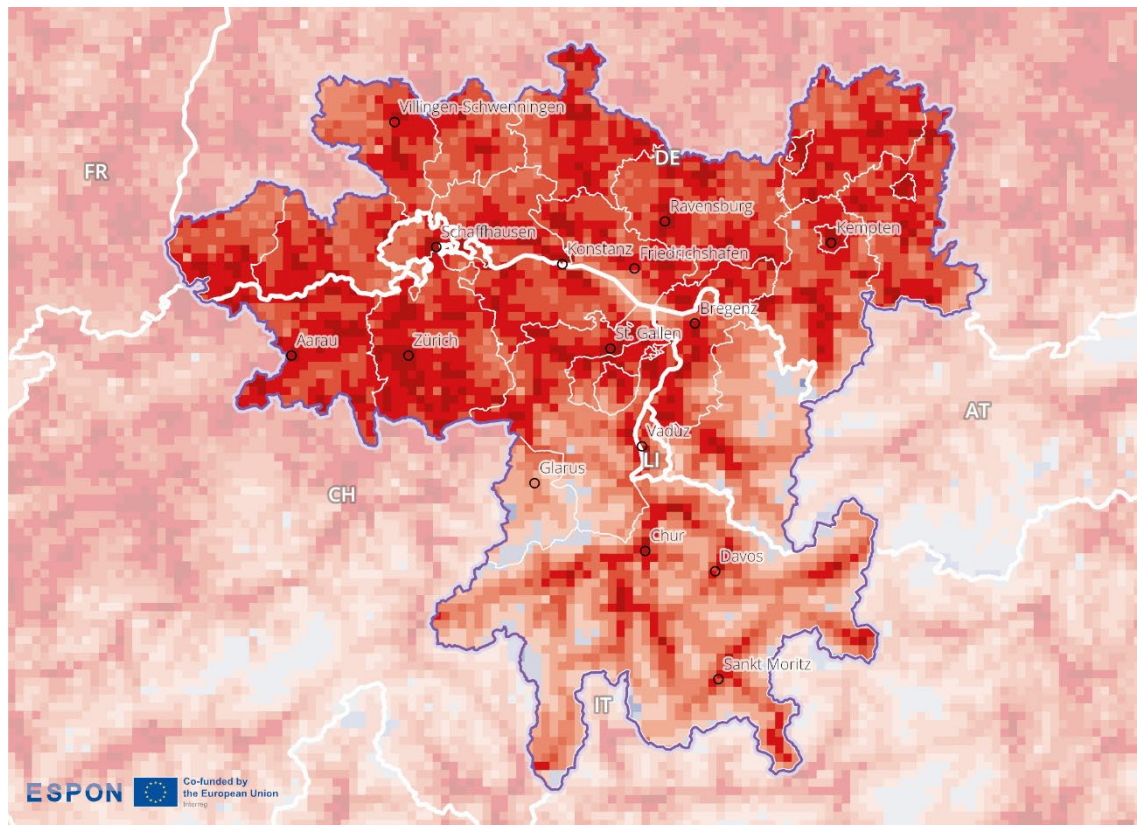
Level of detail: 2.5km grid  
Source: FAU, UPOL, OIR & EPRC, ESPON Core-IB, 2026  
Origin of data: ESPON PROCECY Update, 2022  
©EuroGeographics for administrative boundaries

Interreg VI-A perimeter  
national border  
NUTS 3 border

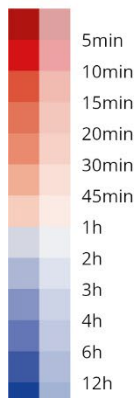


© ESPON, 2026

**Figure 2.32: Travel time to hospitals**



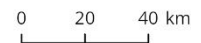
**Car travel time to the nearest hospital (2021)**



inside  
outside  
of the Interreg VI-A perimeter

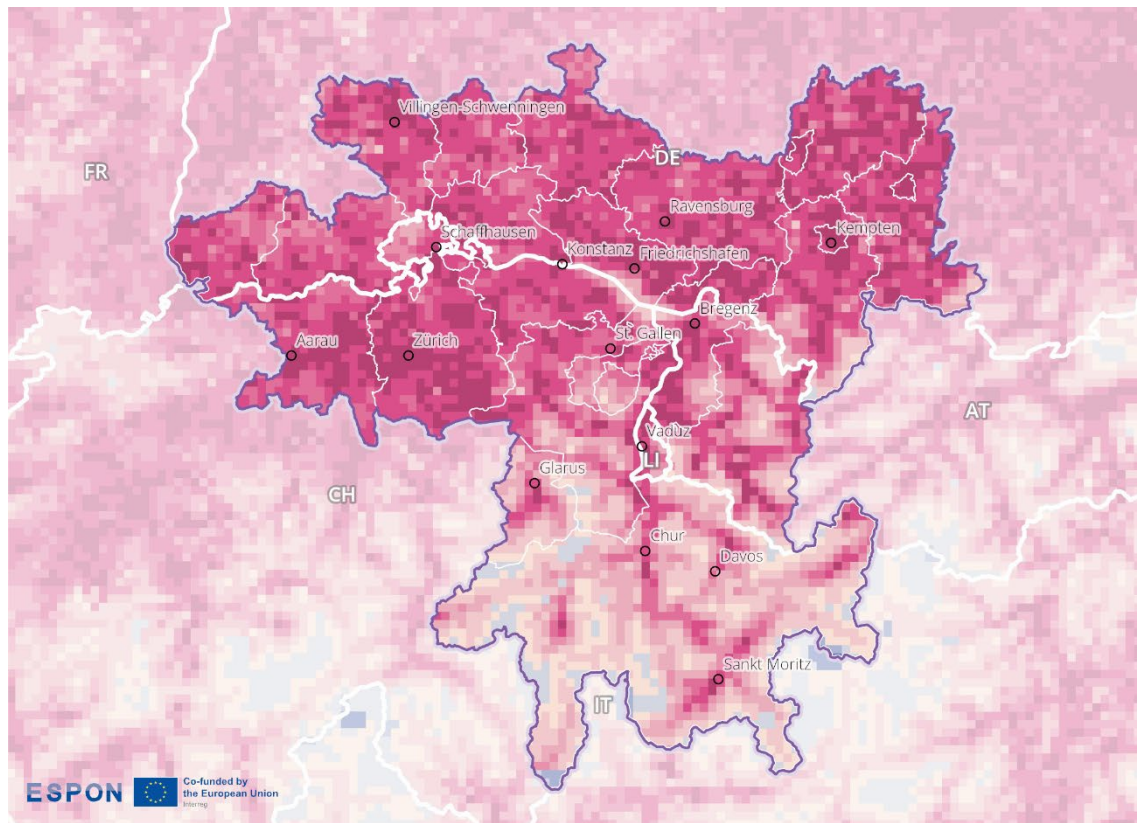
Level of detail: 2.5km grid  
Source: FAU, UPOL, ÖIR & EPRC, ESPON Core-IB, 2026  
Origin of data: ESPON PROCECY Update, 2022  
©EuroGeographics for administrative boundaries

Interreg VI-A perimeter  
national border  
NUTS 3 border

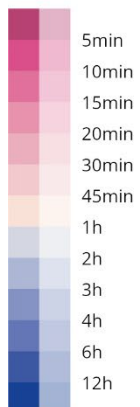


© ESPON, 2026

**Figure 2.33: Travel time to doctors**



**Car travel time to the nearest doctor (2021)**



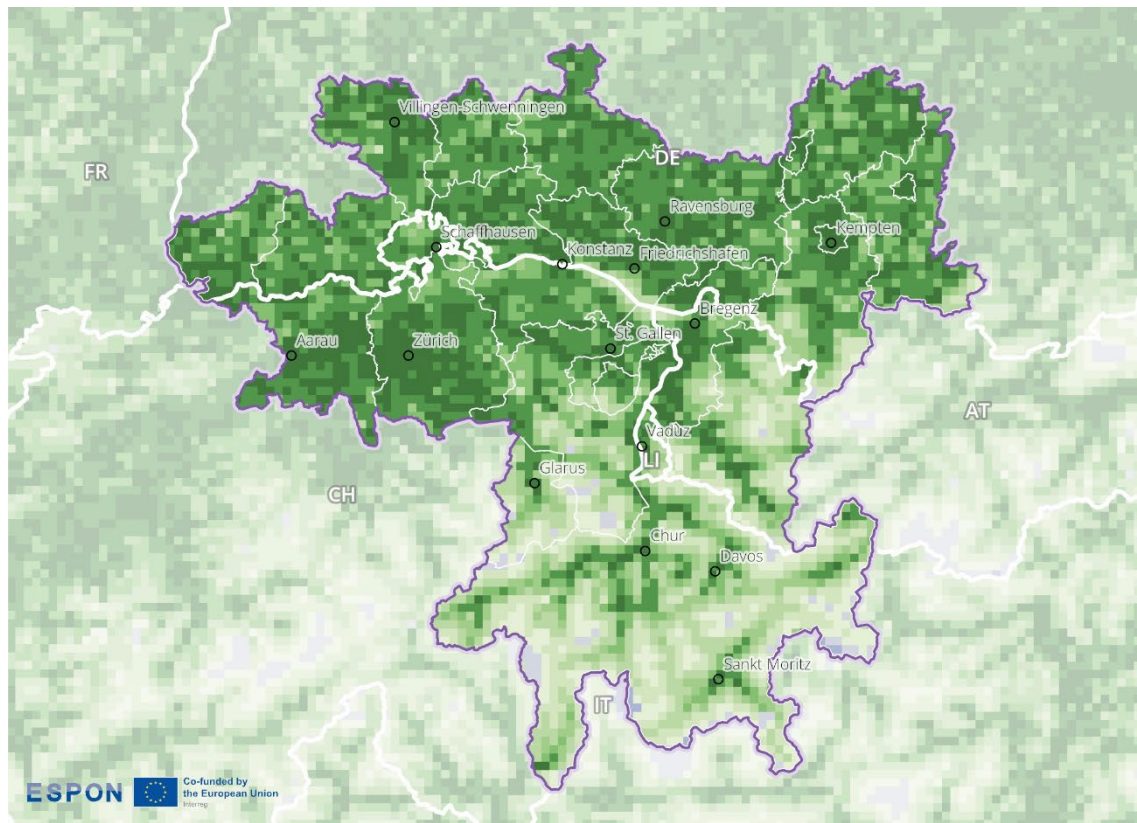
inside  
outside  
of the Interreg VI-A perimeter

Level of detail: 2.5km grid  
Source: FAU, UPOL, ÖIR & EPRC, ESPON Core-IB, 2026  
Origin of data: ESPON PROCECY Update, 2022  
©EuroGeographics for administrative boundaries

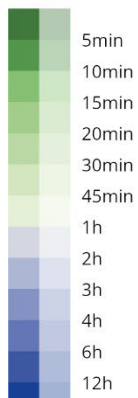
Interreg VI-A perimeter  
national border  
NUTS 3 border



**Figure 2.34: Travel time to pharmacies**



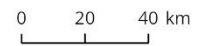
**Car travel time to the nearest pharmacy (2021)**



inside  
outside  
of the Interreg VI-A perimeter

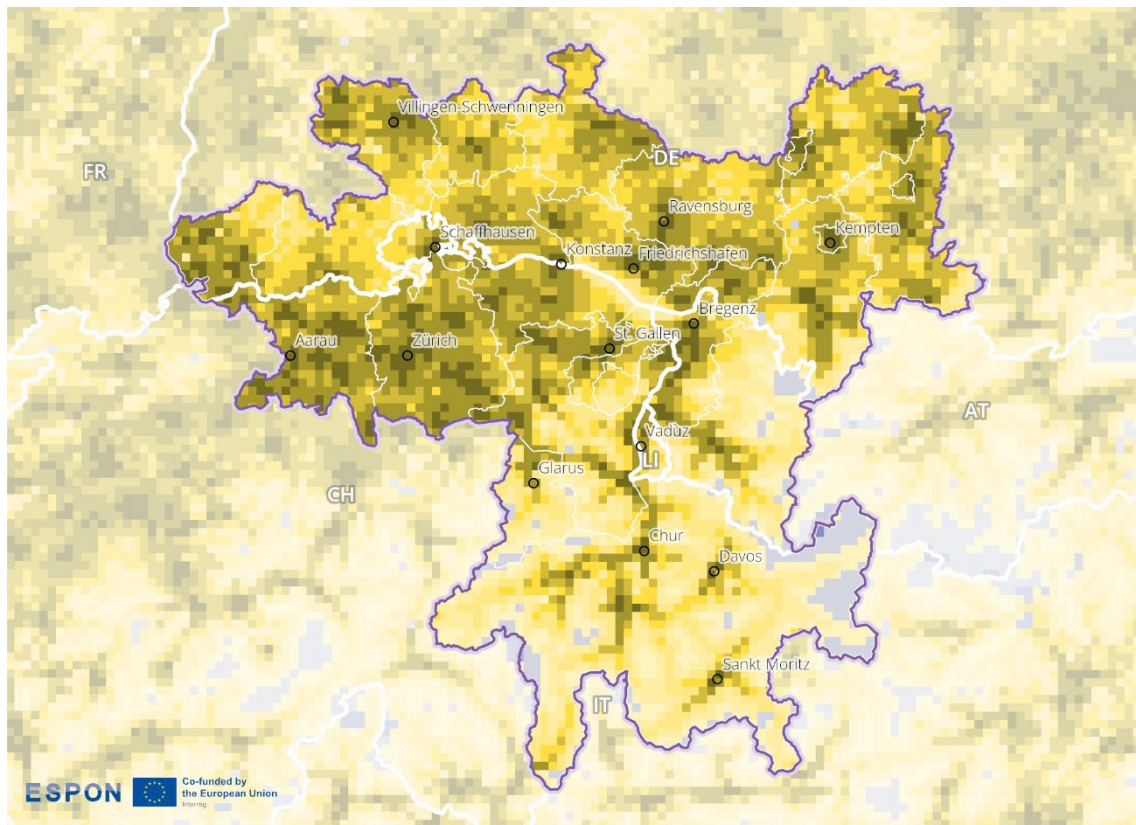
Level of detail: 2.5km grid  
Source: FAU, UPOL, ÖIR & EPRC, ESPON Core-IB, 2026  
Origin of data: ESPON PROCECY Update, 2022  
©EuroGeographics for administrative boundaries

Interreg VI-A perimeter  
national border  
NUTS 3 border

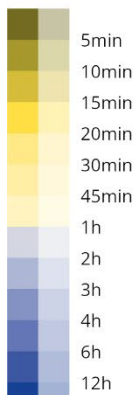


© ESPON, 2026

**Figure 2.35: Travel time to cinemas**



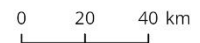
**Car travel time to the nearest cinema (2021)**



inside  
outside  
of the Interreg VI-A perimeter

Level of detail: 2.5km grid  
Source: FAU, UPOL, OIR & EPRC, ESPON Core-IB, 2026  
Origin of data: ESPON PROCECY Update, 2022  
©EuroGeographics for administrative boundaries

Interreg VI-A perimeter  
national border  
NUTS 3 border



© ESPON, 2026

#### 2.4.4 Key messages on the socio-economic dimension

The border region is characterised by a combination of shared language and culture, a strong tourism economy, and the constraints and opportunities imposed by the geography of the Alps. While these elements reinforce cross-border integration, they also create tensions that require careful coordination across national boundaries.

Social interaction is relatively balanced across the borders, with the highest levels in Liechtenstein and Austria, and more moderate levels in Switzerland and Germany. This relative homogeneity reflects the region's limited cultural barriers. German is the dominant language across most areas, providing a common foundation for integration. Only in Graubünden do linguistic minorities (Italian and Rhaeto-Romanic speakers) introduce diversity, which, in some cases, adds complexity to communication and service provision.

Tourism is another defining feature of the region, influencing both social interaction and spatial development. Regions such as Graubünden and Bludenz-Bregenzerwald in the eastern Alps record very high numbers of overnight stays, highlighting the region's role as a popular European tourist destination. While tourism generates income, employment and infrastructure investment, it also creates seasonal pressures, land-use conflicts and local resistance in areas of overtourism. These dynamics are not limited to national borders: high tourism intensity in Austrian or Swiss valleys affects housing markets, mobility and labour markets in neighbouring German and Liechtenstein areas.

The distribution of services of general interest reflects the underlying Alpine geography, which limits settlement space and complicates infrastructure provision. Residents of remote areas face longer travel times to essential services, whereas those living in urban centres benefit more from proximity to cultural amenities such as cinemas.

## 2.5 Border security and safety

This dimension shows the security and safety conditions in border regions. It analyses the number of days on which border control is temporarily reintroduced at internal borders, using this as an indicator of security concerns and restrictions on cross-border movement.

### 2.5.1 Temporary reintroduction of border controls at internal borders

#### Indicator description

The indicator shows the number of days of temporary reintroduction of border control at internal borders, including the official reasons behind. The reintroduction of border control at the internal borders must be applied as a last resort measure, in exceptional situations, and must respect the principle of proportionality. The scope and duration of reintroduced border control should be restricted to the bare minimum needed to respond to the threat in question.

- **Source/method of retrieval:** Processing and analysis data of European Commission information pursuant to Article 25 and 28 et seq. of the Schengen Borders Code
- **Temporal coverage:** 2006-2025 (cut-off: 08 May 2025, in order to allow data treatment before work package completion)
- **Unit:** Days per year

Please refer to the technical annex for more information.

Figure 2.36 illustrates the number of days during which temporary border controls were reintroduced at internal borders within the Schengen Area. Each bubble represents a specific year with bubble sizes indicating the number of days the respective border was under control. The categories of reasons for reintroducing controls include:

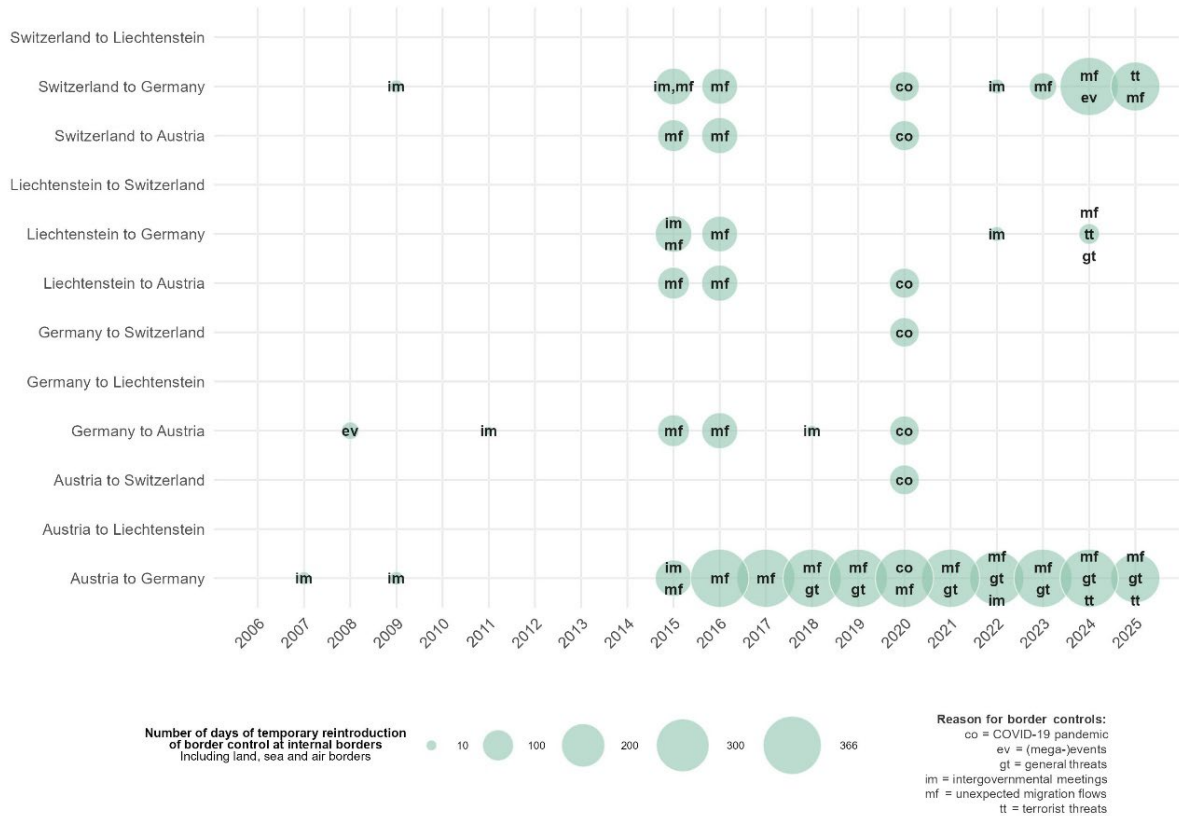
- > co – COVID-19 pandemic
- > ev – (Mega-)events
- > gt – General threats
- > im – Intergovernmental meetings
- > mf – Unexpected migration flows
- > tt – Terrorist threats

The data spans from 2006 to 2025 (cut-off: 08 May 2025) and is based on notifications from the European Commission information pursuant to Article 25 and 28 et seq. of the Schengen Borders Code. In line with Schengen rules, the reintroduction of controls is to be used only as a last resort, for

exceptional circumstances, and with strict adherence to the principle of proportionality—both in duration and scope.

Germany and Austria had already been part of the Schengen Area by 2006. Switzerland joined in 2008 for land borders and in 2009 for air borders, while Liechtenstein became a member in 2011.

**Figure 2.36: Temporary reintroduction of border controls**



The Germany-Austria-Switzerland-Liechtenstein border area is characterised by an asymmetric pattern:

- › Crossing the border from Switzerland to Liechtenstein: Between 2006 and 2025, Liechtenstein did not reintroduce any temporary border controls to Switzerland.
- › Crossing the border from Switzerland to Germany: Temporary border control occurred in 8 out of 20 years, driven by a wide range of security and migration-related factors, including high-level summits (e.g., G7, NATO), persistent irregular migration (2015–2025), secondary movements, COVID-19 (2020), smuggling, and threats related to international crises such as the war in Ukraine.
- › Crossing the border from Switzerland to Austria: Temporary border control occurred in 4 out of 20 years, driven by a wide range of security and migration-related factors, including major sports events such as the EURO 2008, big influx of persons seeking international protection (2015-2016) and COVID-19 (2020).
- › Crossing the border from Liechtenstein to Switzerland: Between 2006 and 2025, Switzerland did not reintroduce any temporary border controls to Liechtenstein.
- › Crossing the border from Liechtenstein to Germany: Temporary border control occurred in 4 out of 20 years, driven by a wide range of security and migration-related factors, including high-level summits (e.g., G7 in 2022), big influx of persons seeking international protection (2015-2016) as well as smuggling, and threats related to international crises such as the war in Ukraine (2024).

- › Crossing the border from Liechtenstein to Austria: Similar to the patterns of temporary border controls when going from Switzerland to Austria.
- › Crossing the border from Germany to Switzerland: Temporary border controls took place in 1 out of 20 years due to COVID-19 (2020)
- › Crossing the border from Germany to Austria: Border controls occurred in 6 of 20 years, mainly tied to specific events like the EURO 2008, World Economic Forum 2011, migration influx (2015–2016), and COVID-19 (2020).
- › Crossing the border from Austria to Switzerland: Similar to the patterns of temporary border controls when going from Germany to Switzerland.
- › Crossing the border from Austria to Liechtenstein: Between 2006 and 2025, Liechtenstein did not reintroduce any temporary border controls to Austria.
- › Crossing the border from Austria to Germany: Temporary border control occurred in 13 out of 20 years, driven by a wide range of security and migration-related factors, including high-level summits (e.g., G7, NATO), persistent irregular migration (2015–2025), secondary movements, COVID-19 (2020), smuggling, and threats related to international crises such as the war in Ukraine.

From a comparative perspective, Germany has implemented controls for significantly more days than the other countries, indicating an unequal impact on cross-border movement in mostly one direction.

These controls tend to have a tangible effect on the smooth functioning of cross-border flows, especially commuting and logistics, as they introduce delays and unpredictability.

### 2.5.2 Key messages on the border security dimension

The border area is characterised by frequent cross-border flows of people and goods, yet it has also experienced repeated temporary border controls. Looking at the period from 2006 to 2025, a clear asymmetry emerges. Germany reintroduced controls far more frequently than Austria, Switzerland or Liechtenstein. This reflects, among other things, Germany's role as a central transit and destination country for migration and international mobility, and its hosting of high-level political events such as G7 and NATO summits.

The 2020 COVID-19 pandemic added another layer by demonstrating that health crises can disrupt the principle of open borders within the Schengen Area. In contrast, Liechtenstein has never reintroduced controls on its neighbours.

These differences impact daily life in the border region. Many residents commute across borders for work, education or services, and goods continuously move along Alpine transport corridors. Even short-term controls can cause delays and reduce predictability, affecting trust in the stability of open borders.

## 2.6 Governance dimension

This section covers the cross-border governance of the Cross-border cooperation "Interreg VI-A Germany-Austria-Switzerland-Liechtenstein (Alpine Rhine-Lake Constance-High Rhine)". Several cross-border political-administrative cooperation structures have existed for an extended period, (e.g., the International Rhine Regulation and the Joint Rhine Commission, the International Lake Constance Conference (IBK), the German Conference of Rhine and River Rhine Directorates, etc.). Within these permanent structures, cooperation between national and regional governments and their administrations takes place. In addition, other permanent cooperation structures and networks exist that also contribute to cross-border governance through their ongoing thematically specific or cross-thematic work (e.g., the Lake Constance Foundation, the International Lake Constance Tourism GmbH, ArgeAlp, etc.).

### 2.6.1 Cross-border cooperation

This sub-dimension identifies the extent of cross-border cooperation in the border region. It illustrates areas of high cooperation intensity and identifies functional links in governance structures across borders. It also identifies areas with high awareness of obstacles and the willingness and support services to overcome them, as well as areas where Interreg cooperation intensity is already strong.

#### 2.6.1.1 Cross-border governance structures

##### Indicator description

The indicator shows active institutionalised cooperation that act as cross-border entities. It includes cooperation formats such as Eurocities, Euroregions, EGTC, cross-border associations, cross-border councils, etc.

- **Source/method of retrieval:** Localisation and categorising of cross-border cooperation formats (Eurocities, Euroregions, EGTC, cross-border associations, cross-border councils, conferences, working communities), based on desktop research.
- **Temporal coverage:** Status as of October 2025
- **Unit:** n/a

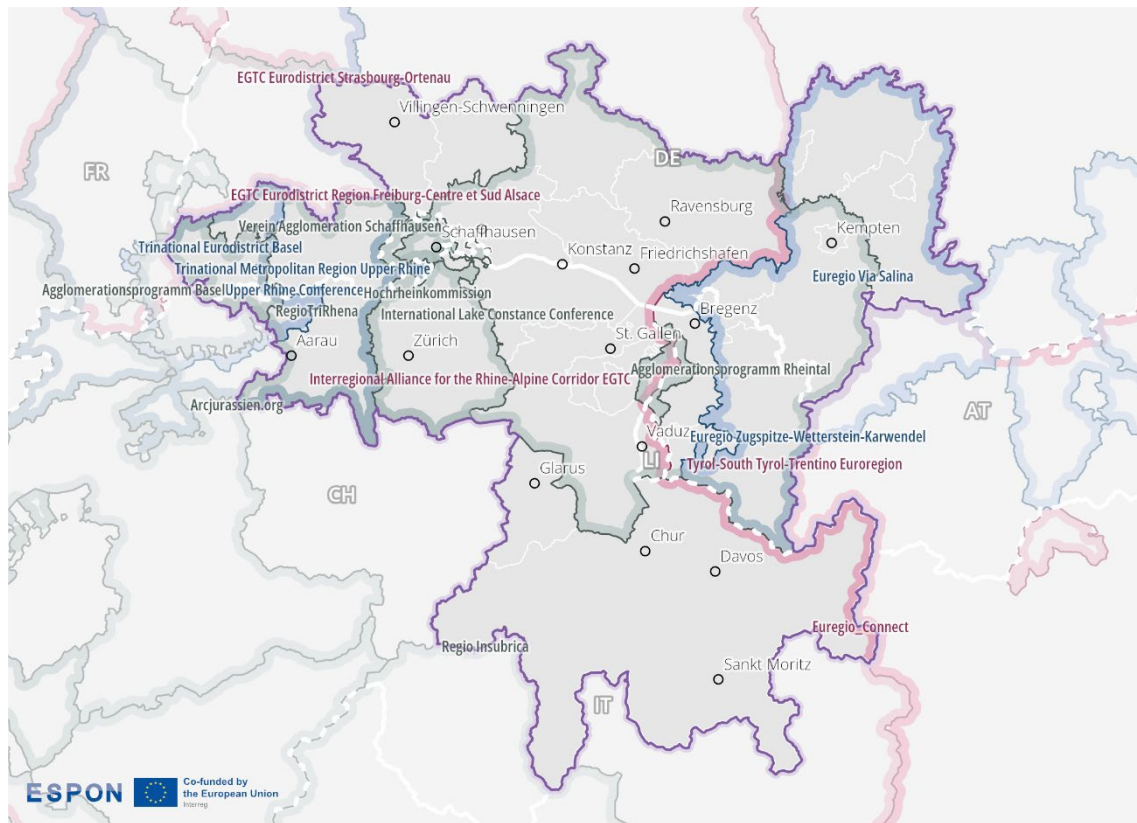
Please refer to the technical annex for more information.

Figure 2.37 shows the different types of institutionalised cooperation. These governance structures either function as cross-border entities or bring together stakeholders from the cross-border region around shared topics. The governance structures covered include Eurocities, Euroregions, European Groupings of Territorial Cooperation (EGTCs), cross-border associations and councils. Project-based cooperation is not included.




The coloured markings on the map indicate different types of institutionalisation: EGTCs are shown in red, Eurocities in yellow, Euroregions/Euregios/Europaregions/Eurodistricts in blue, and other formats in grey.

The multi-level governance structure in this programme area displays broad spatial coverage along the borders. Overall, the region exhibits a high level of institutionalised cross-border cooperation. The most prevalent formats are those at the Euroregional level and EGTCs.




**Figure 2.37: Cross-border governance structures**



**Format of cooperation**

-  EGTC
  -  Euroregion / Euregio / Europaregion / Eurodistrict
  -  other
- inside  
outside  
of the Interreg VI-A perimeter

Level of detail: NUTS3  
 Source: FAU, UPOL, ÖIR & EPRC, ESPON Core-IB, 2026  
 Origin of data: ESPON CROSSGOV, 2026  
 ©EuroGeographics for administrative boundaries

-  Interreg VI-A perimeter
-  national border
-  NUTS 3 border



© ESPON, 2026

### 2.6.1.2 Cross-border public services

#### Indicator description

The indicator shows different services specialised on cross-border challenges and development potential, including their domain of operation. As a specific form of services of general interest, cross-border public services (CPS) address joint problems or development potentials of border regions that are located on different sides of one or more national borders.

- **Source:** ESPON cross-border public services (CPS) 2.0 database
- **Temporal coverage:** 2022
- **Unit:** n/a

Please refer to the technical annex for more information.

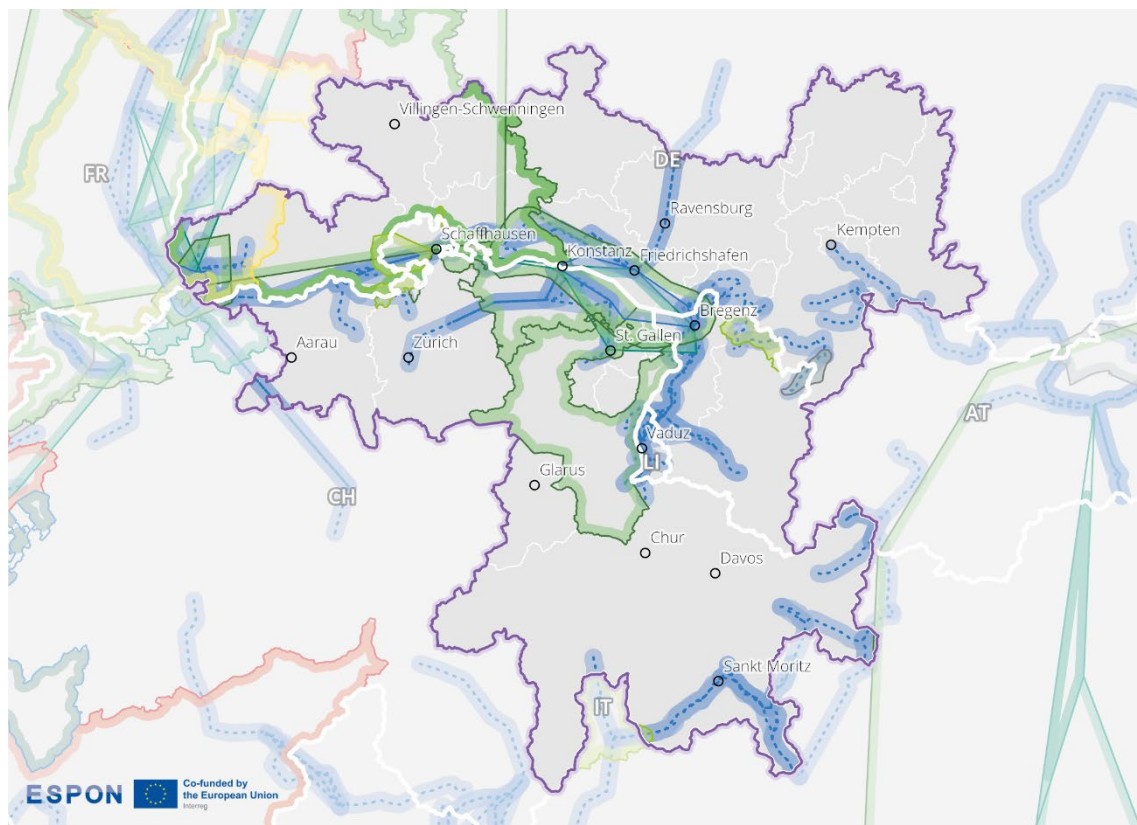
Figure 2.38 depicts the geographical extent of cross-border public services in the border area in 2022. Different thematic areas are represented by distinct symbols and colours, indicating services such as disaster management, health care, transportation, education, environment, energy, job placement, and culture. The visualisation highlights where these services operate across the national boundary.

Cross-border public services in the Germany-Austria-Switzerland-Liechtenstein Interreg region are highly concentrated around Lake Constance, with strong activity spanning Schaffhausen, Konstanz, Vaduz, and the greater Zürich area. The dominant service theme is transportation, forming a dense and continuous network stretching from Zürich in Switzerland to Ravensburg, Kempten, and across into Vorarlberg in Austria.

Significant tourism & information services follow the Alpine arc, with dense coverage along the Swiss-German border and into Liechtenstein. In education & research cooperation exists between St. Gallen, Konstanz, Friedrichshafen and Bregenz (International Lake Constance University). Smaller but clear zones of environment & water cooperations also appear, primarily in Swiss-German areas north of Zürich.<sup>17</sup>

<sup>17</sup> For further details see the ESPON CROSSGOV hub: <https://gis-portal.espon.eu/arcgis/apps/storymaps/collections/345c978adf784ad-fac30c16b90219d35?item=2>

**Figure 2.38: Cross-border public services**



**Geographical extent of cross-border public service themes (2022)**

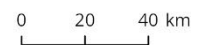
areal	linear	character of the service
		Disaster management
		Health care
		Transportation
		Tourism & information
		Education & research
		Environment & water
		Heating & energy
		Job placement
		Culture

inside outside      inside outside  
of the Interreg VI-A perimeter

Cross-border public services covering more than one theme have been assigned only to one. Furthermore, some polygons have been excluded because they were only approximately and not accurately spatially defined.

Level of detail: geolocalised lines and areas  
Source: FAU, UPOL, ÖIR & EPRC, ESPON Core-IB, 2026  
Origin of data: ESPON CPS, 2022  
©EuroGeographics for administrative boundaries

Interreg VI-A perimeter  
 national border  
 NUTS 3 border



© ESPON, 2026

### 2.6.1.3 Perceived cross-border obstacles in b-solutions

#### Indicator description

The indicator shows cases of legal or administrative obstacles selected in the framework of the b-solutions initiative. This indicator lists the number, location and nature of suggested solution of cases in the b-solutions initiative, including the topic and parties involved.

- **Source/method of retrieval:** Processing and analysis of the b-solutions initiative data
- **Temporal coverage:** 2018-2025 (first quarter)
- **Unit:** n/a

Please refer to the technical annex for more information.

The b-solutions initiative is a European Union project that supports the resolution of legal, operational and administrative cross-border obstacles. It offers funding for pilot actions and legal expert advice in border regions. A high level of cross-border integration often reveals strong barriers of cross-border functioning. In order to exploit the cross-border potentials, these obstacles have to be overcome or at least addressed. Both the number of reported obstacles and the general interest in solutions serve as important indicators of cross-border interaction.

As part of the ESPON CROSSGOV project, all b-solutions initiatives were analysed to deepen the understanding of the thematic focus of the perceived cross-border obstacles across different border regions and the suggested solution. For the particular case of the Germany-Austria-Switzerland-Liechtenstein programme area, no participation in b-solutions projects has been reported yet.

### 2.6.1.4 Institutionalised advice centres for cross-border issues

#### Indicator description

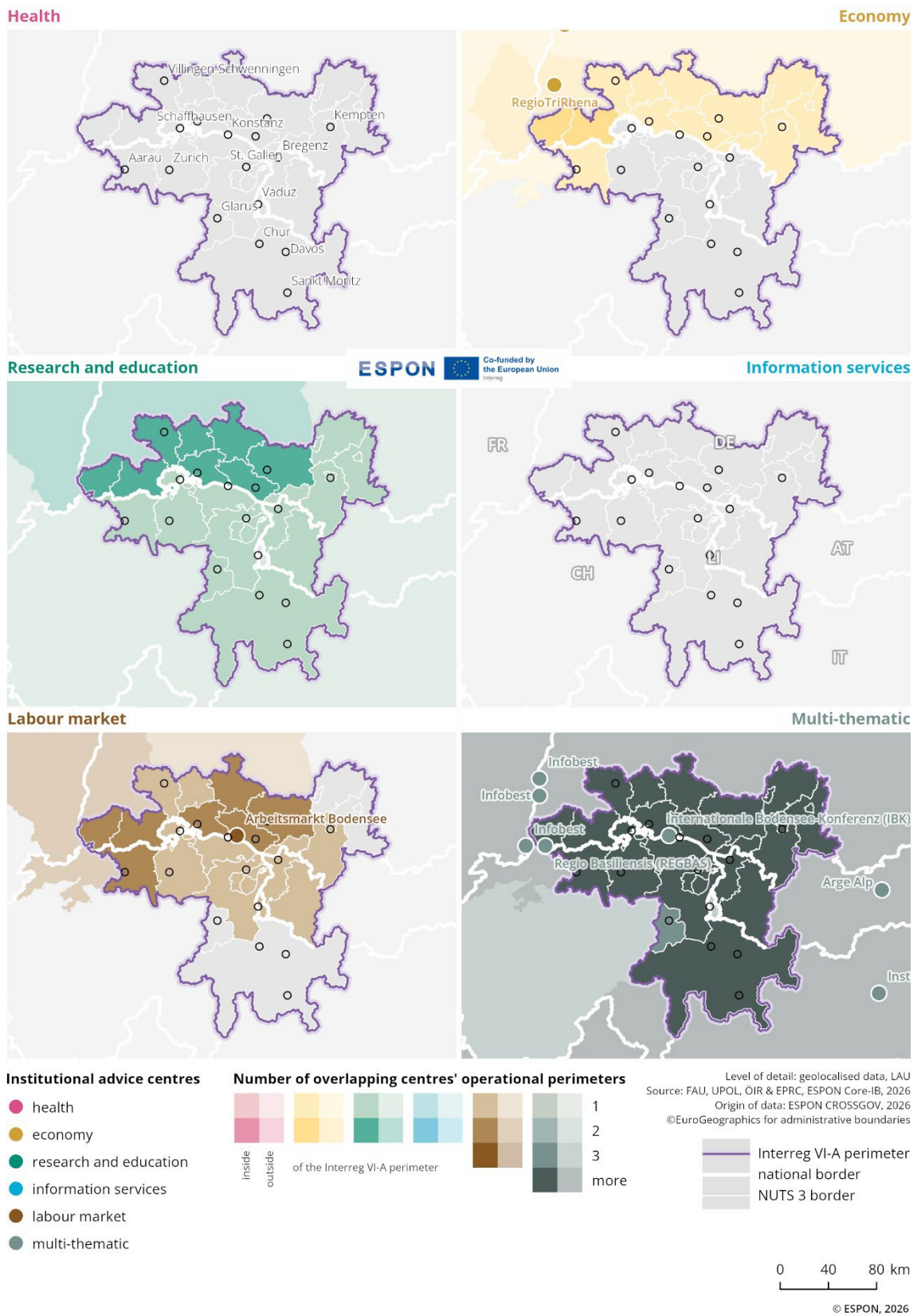
The indicator shows where institutionalised advice centres on cross-border issues are located, including their thematic focus and geographical perimeter.

- **Source/method of retrieval:** Localisation and thematic focus of advice centres for cross-border issues are identified via desktop research.
- **Temporal coverage:** Status as of February 2025
- **Unit:** n/a

Please refer to the technical annex for more information.

Figure 2.39 shows the locations and types of institutionalised advice centres, along with their operational domains, in the cross-border Interreg region between Germany, Austria, Switzerland and Liechtenstein (Alpenrhein-Bodensee-Hochrhein). These centres throughout Europe provide support in various fields such as health, economy, research & education, information services, the labour market, and multi-thematic issues. The operational domains of these centres are also indicated by coloured shading on the map. The more intense the colour, the stronger the influence of that specific domain in the corresponding area.

**Figure 2.39: Institutionalised cross-border advice centres**



Within the Interreg region, there are 2 multi-thematic institutionalised advice centres, both located along the national border between Germany and Switzerland. Regio Basiliensis (REGBAS) is situated in the western part, close to the French national border, while the other is located further east near the

city of Konstanz. Konstanz also hosts a labour market-oriented institutionalised advice centre called Arbeitsmarkt Bodensee.

Beyond the Interreg region, at its western border, there are additional institutionalised advice centres, most of them multi-thematic and affiliated with Infobest. In addition, there is the economic institutionalised advice centre known as RegioTriRhena.

Across the entire Interreg area, multi-thematic, labour market, as well as research and education operational domains are represented in all 4 countries, though with regional differences. A wider range of topics is covered in the German part of the Interreg region. Centres with economic operational domains are absent in the Austrian, Liechtenstein, and partly also the Swiss part of the Interreg region, while they are more prominent in the German part, especially in the western German section of the Interreg area.

## 2.6.2 Outline of Interreg activities

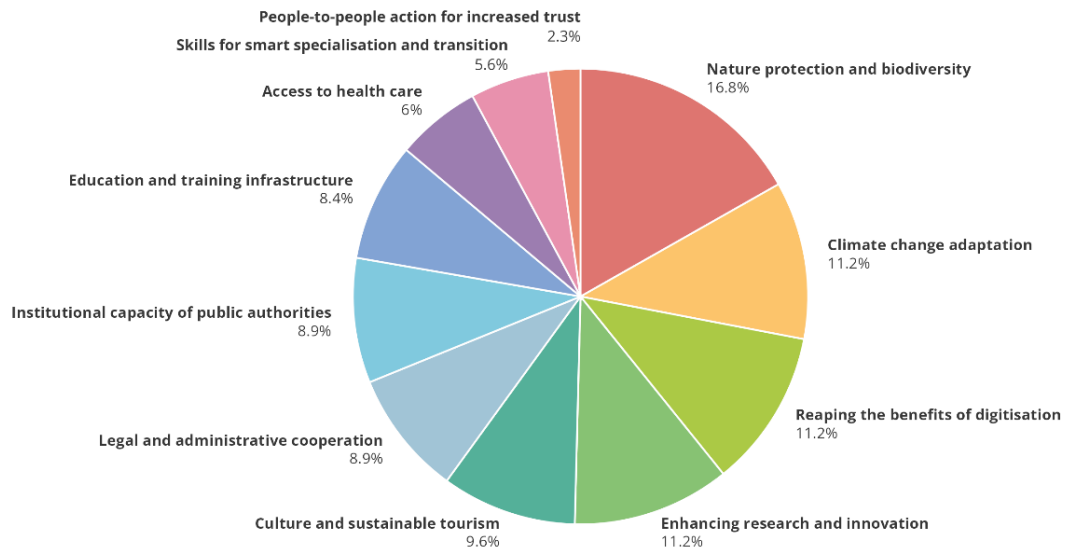
The following section outlines the key Interreg activities in the 2021-2027 programming period. The aspects included concern the development opportunities and challenges identified (see Table 2), the budget available and split of allocation (Figure 2.40), overlapping Interreg programmes and the key aspects drawn from the programme.

**Table 2: Interreg VI (2021-2027): Opportunities and challenges**

Topic	Key development opportunities and challenges identified for Interreg 2021-27
<b>Territory</b>	<ul style="list-style-type: none"> <li>▪ Borders are predominantly formed by natural borders: in the east of the region by the Rätikon mountain range, in the Rhine Valley and on the High Rhine by the Rhine, and, of course, by Lake Constance. The border demarcation at Lake Constance is unique in that it has not yet been defined in large parts of the lake.</li> </ul>
<b>Economy</b>	<ul style="list-style-type: none"> <li>▪ Innovative and highly dynamic economy</li> <li>▪ Knowledge economy, the programme area has important potential, both due to the many universities, (technical) colleges and research institutions, a</li> </ul>
<b>Labour and population</b>	<ul style="list-style-type: none"> <li>▪ Mixed patterns of population increase and decrease through the area.</li> <li>▪ Diverse cultural heritage and a shared history</li> <li>▪ Interconnectedness of the regional labour markets around Lake Constance.</li> <li>▪ Important drivers of labour mobility are wage and salary differences and the absence of a language barrier.</li> <li>▪ Unbalanced interdependencies in the cross-border labour market lead to either positive or negative cross-border commuter balances</li> </ul>
<b>Environment and climate</b>	<ul style="list-style-type: none"> <li>▪ Protect the environment and water quality of Lake Constance</li> <li>▪ The programme area has diverse landscapes and natural areas, particularly along the High Rhine or the Alpine Rhine and high mountains</li> <li>▪ Climate change continues to pose challenges for the programme area</li> </ul>

**Total Budget:** EUR 67,955,803.84

**Figure 2.40: Split of Interreg allocation**



© FAU, UPOL, ÖIR & EPRC, ESPON Core-IB, 2026; Origin of data: Cohesion Open Data Platform/European Commission, 2025

Table 3 shows the number of Interreg 2021-2027 cross-border and transnational programmes which share at least one NUTS3 region with the border area. Each programme has its own distinct rationale, value and territorial focus. However, for the purposes of, for example, planning and capitalisation activities it is potentially helpful for programmes and programme stakeholders to be aware of and connected to other Interreg programmes with which they share a direct territorial link.<sup>18</sup> The 4 Interreg C programmes Interreg ESPON, Interact, Interreg Europe and URBACT (Urban Action) cover the whole EU territory and provide a range of joint services and initiatives.

**Table 3: Shared geographies with other cross-border and transnational programmes**

Interreg A (cross-border)	Interreg B (transnational)
3	4

**Key aspects**

- › Focuses on enhancing regional connectivity and sustainable mobility through projects aimed at developing cross-border public transport systems and the cycling infrastructure.
- › Also aims to foster innovation and competitiveness by supporting joint research initiatives and technology transfer between universities and businesses.
- › Some territories within the programme area are also involved in the 2021-27 Interreg A programmes Austria-Germany, France-Germany-Switzerland (Upper Rhine), Italy-Switzerland and Interreg B Alpine Space, Danube and North West Europe and Central Europe Programmes.
- › The cross-border region is part of the macro-regional strategy "EU Strategy for the Alpine Region" (Alpine Strategy). To a limited extend it is also part of the "EU Strategy for the Danube Region" (Danube Strategy).

<sup>18</sup> It is noted that synergies and links with a wide range of other territorial cooperation and sectoral programmes and initiatives are also valuable and this is reflected in the wider analyses presented in this border profile, but not specifically covered in this table.

### 2.6.2.1 Interreg cooperation

#### Indicator description

Based on the keep.eu database, this indicator illustrates the network density of Interreg V-A (2014–2020). It is derived from the geographical location of all partners within a project consortium and reflects the intensity of cooperation between them. For the analysis, project networks were visualised by drawing lines between the locations of partners within a consortium. These connections were subsequently aggregated and spatially abstracted by calculating line density using GIS software. Dark red areas indicate a high density of connections between project partners, while yellow areas represent a lower density of cooperation links.

An additional element in this section is the development of project partner numbers between Interreg IV-A (2007–2013) and Interreg V-A (2014–2020), based on data from the keep.eu database. The datasets were cleaned to remove duplicates, using the partner names as reported in keep.eu. For both programming periods, keep.eu indicates a high level of data completeness<sup>19</sup>. Nevertheless, this development should be interpreted as indicative, as variations in partner name reporting and general limitations regarding the representativeness of the dataset affect the robustness of the results.

- **Source/method of retrieval:** Processing and analysis of the keep.eu database
- **Temporal coverage:** 2007-2013 (Interreg IV-A), 2014-2020 (Interreg V-A)
- **Unit:** n/a

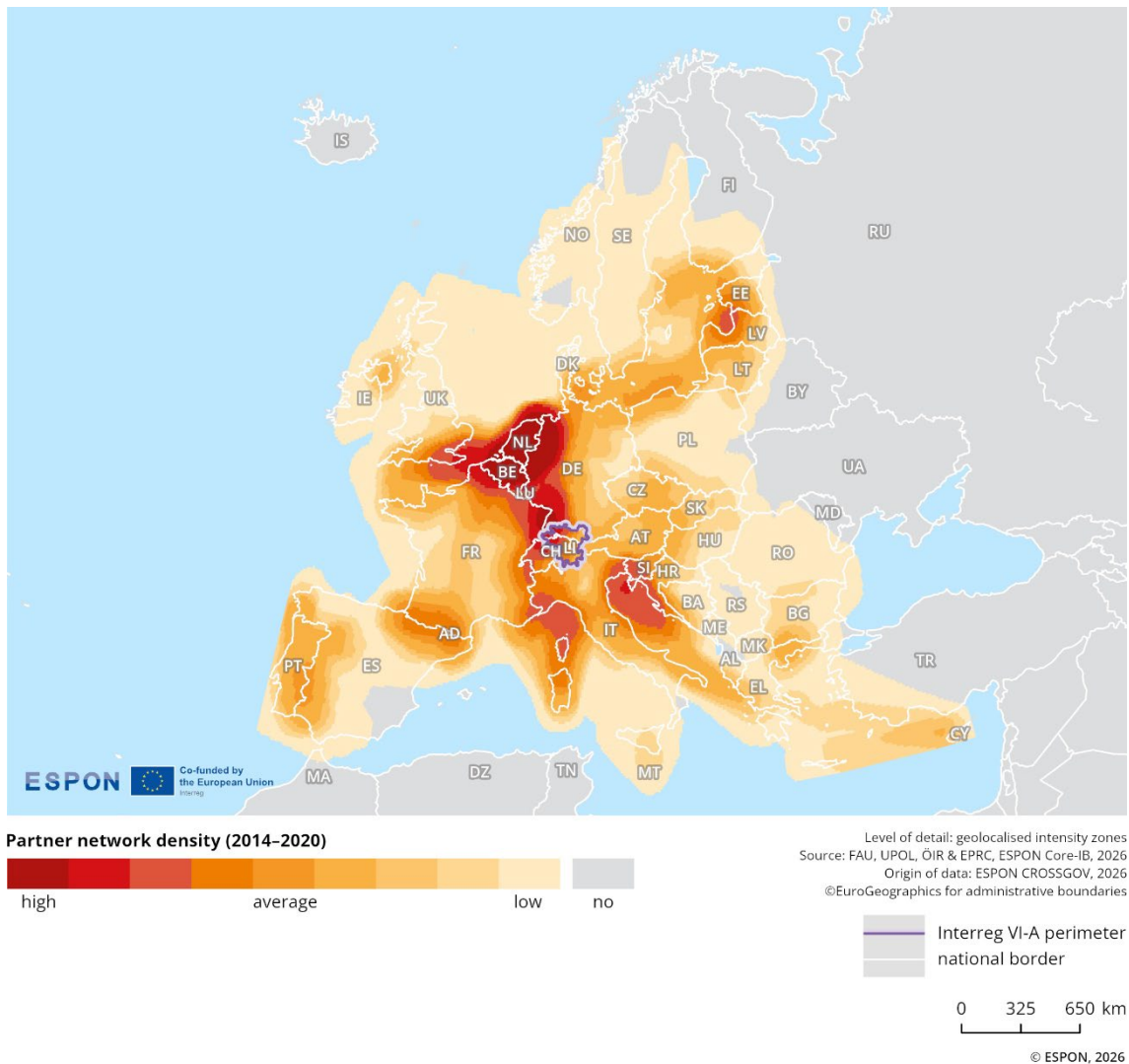
Please refer to the technical annex for more information.

Cooperation activities and networks are among the most meaningful types of information for delineating cross-border functional areas. As such, the indicator on cooperation through Interreg can help to identify networks among cross-border actors and highlight the density of cooperation in specific border segments.

Figure 2.41 shows the density of Interreg V A (2014–2020) partner networks. The indicator includes the location of, and links between, Interreg project partners within a project consortium. From a European perspective, partner network density in the Alpenrhein-Bodensee-Hochrhein border area appears to be somewhat unevenly distributed. It is high in the western part of the programme area, while eastern regions show more average levels of cooperation. Overall, the partner network density in this border area is slightly higher than the European average. Based on the keep.eu database and excluding duplicates, the number of project partners decreased from 471 in Interreg IV-A (2007-2013) to 299 in Interreg V-A (2014-2020), a decrease of about 37%. It is important that these changes are considered in the context of factors such as change in programme budgets between 2007-2013 and 2014-2020, emphasis on targeting impact, and numbers of strategic projects.

<sup>19</sup> see [Keep.eu representativeness: Interreg, Interreg-IPA and ENI cross-border](#)

**Figure 2.41: Interreg V-A partner network density**



### 2.6.3 Key messages on the governance dimension

The border area has a long tradition of cross-border cooperation. The main characteristic of this border region is its highly institutionalised, multi-layered system of cooperation, which can be explained by its strong functional links and common opportunities and challenges posed by the Alpine environment.

Notably, a wide range of governance structures are present, including Euroregions, EGTCs, councils and associations, which cover most parts of the border. This reflects a strong political will to collaborate on common challenges, with Euroregional structures and EGTCs playing the most prominent roles.

Cross-border public services are a tangible outcome of this cooperation, particularly in the Lake Constance region. Transport networks are the backbone of integration here, connecting Zürich with Ravensburg, Kempten and Vorarlberg. This supports daily mobility and commuting, as well as strengthening economic and social cohesion. Tourism and information services follow the Alpine region, highlighting the Alps' dual role as an attraction and a challenge. Links between St. Gallen, Vaduz, and western Austria in the fields of education and research further highlight the region's knowledge-driven orientation, while environmental cooperation illustrates shared responsibility for fragile ecosystems.

Institutionalised advice centres add another layer. Concentrated along the Swiss–German border, these centres provide support on labour market access, research, economic cooperation and wider, multi-thematic issues. The distribution of these centres, with a greater variety of domains represented on the

German side, demonstrates how national contexts influence the practical implementation of cooperation.

Interreg activities bring these elements together by providing resources to improve transport connectivity, promote innovation and strengthen networks between universities and businesses. The area also benefits from the overlap of Interreg and macro-regional strategies, which integrate it into wider European cooperation frameworks. However, the intensity of cooperation is uneven: western areas have a higher density of project networks than eastern areas.

### 3 Summary and key observations

To support the strategic dialogue on cross-border cooperation beyond 2027, this territorial analysis provides harmonised and comparable information. Its data-driven evidence helps to inform the future direction of cross-border cooperation by facilitating alignment with EU priorities and the evolving regulatory framework. The Core-IB border profiles adopt a harmonised methodology and provide programme areas with access to recent European data. As this approach comes along with limitations, member states may hold additional or more detailed data which can further enrich or contextualise the findings beyond the Core-IB project (see final report and technical annex of this project). These national sources are essential for refining and validating territorial evidence in policymaking processes, including: a) regional, fine-scale data and b) insights from political processes related to prioritisation and objective setting. The study's findings are analytical and are intended to support reflection and discussion. They do not create regulatory or policy obligations for Member States, the European Commission, or programme authorities.

Table 4 provides 2 types of information. Firstly, it summarises the key analytical findings for the border region, as discussed earlier in this profile. Secondly, it suggests policy options based on the analytical findings. These options are intended to provide a practical and informative basis for the strategic dialogue among programme bodies, managing authorities and the European Commission.

Generally speaking, the aim of cohesion policy is to promote harmonious territorial development (also) across borders. The objective is to mitigate the impact of borders and achieve 360° functionality, thereby enhancing the quality of life and fostering prosperous development on both sides of the border. The upcoming Interreg period offers an opportunity to address these objectives and potentials through targeted cooperation projects.

**Table 4: Evidence-based conclusions**

Territorial dimension	
<b>Key analytical findings</b>	<ul style="list-style-type: none"> <li>• The border region (6.4 M inhabitants, +9.1% growth 2014–2024) shows high population density and growth, concentrated in Swiss urban centres and lowland corridors, while Alpine areas remain sparsely populated due to topographical constraints;</li> <li>• Demographic dynamics combine ageing with migration and family settlement, driving strong demand for housing and services, particularly in already dynamic urban and border-adjacent areas;</li> <li>• Accessibility reinforces spatial differences: dense road and rail links in lowlands enable commuting and service concentration (notably around Zürich and Lake Constance), while Alpine areas remain limited by longer travel times and static settlement.</li> </ul>

## Territorial dimension

### Policy options

### Population and settlement related aspects

- A relevant policy option is to address the strong demographic growth in the border region, while uneven settlement patterns could be focused on via coordinated cross-border exchange and joint strategy formulation (e.g., harmonising building regulations between the countries, implementing joint affordable housing programmes for border commuters, coordinating public infrastructure investment (schools, healthcare, transport) in rapidly growing areas);
- Strategy development could address the population growth and concentration around cities and transport corridors, supporting more sustainable spatial development across valley regions (e.g., in environmental protection, affordable housing);
- A focus could be on reducing pressures on land use, housing and infrastructure through cross-border perspectives, knowledge exchange and coordinated policy responses.

### Accessibility related aspects

- Cooperation projects could focus an overall high accessibility towards 360-degree connectivity across the border region through coordinated cross-border transport approaches and pilots on infrastructure development;
- Strategy development, pilot projects and knowledge exchange can explore the potentials of 'last-mile connectivity' in mountainous areas and help reduce car dependency, for example through on-demand shuttle services connecting villages to regional rail stations, coordinated bus-train timetables, shared mobility services such as e-bike or car-sharing schemes, and digital mobility platforms integrating different transport modes;
- A focus can be on cross-border transport infrastructure development as a strategic backbone for sustainable mobility and cross-border commuting through integrated spatial development approaches.

### Cross-cutting aspect

- The demographic growth, housing pressure and environmental protection can be addressed in an integrated manner through coordinated cross-border perspectives that balance social, economic and environmental objectives, for example through cross-border spatial planning frameworks or joint land-use strategies that designate areas for housing development while safeguarding environmentally sensitive zones.

<b>Economic dimension</b>	
<b>Key analytical findings</b>	<ul style="list-style-type: none"> <li>• The border region is one of Europe’s most prosperous, with GDP per capita more than double the EU average and high employment rates, though growth is slowing and ageing poses long-term challenges;</li> <li>• Economic resilience is based on a stable mix of manufacturing, trade, and services, but strong wage differences, especially in Switzerland and Liechtenstein, drive significant cross-border commuting and have recently been complemented by telework agreements;</li> <li>• High property prices in Switzerland and uneven digital infrastructure reinforce cross-border mobility and highlight spatial contrasts between dynamic urban centres and more disadvantaged rural Alpine areas.</li> </ul>
<b>Policy options</b>	<p><b>Labour market related aspects</b></p> <ul style="list-style-type: none"> <li>• Cooperation projects could address the cross-border labour market coordination, skills recognition and targeted training to better manage commuter flows driven by high wage levels in Switzerland and Liechtenstein, while supporting balanced regional development;</li> <li>• The development of further digital infrastructure, building on the existing cross-border agreements on telework to reduce commuting pressure and support more flexible working arrangements, while ensuring that rural areas also benefit from these initiatives in order to avoid reinforcing existing inequalities between urban and rural communities.</li> </ul> <p><b>Competitiveness related aspect</b></p> <ul style="list-style-type: none"> <li>• A focus could be placed on the region’s exceptional level of prosperity in the context of slowing economic growth and demographic ageing in order to enhance productivity, innovation and long-term economic resilience, for example through targeted skills and retraining programmes for the ageing workforce, policies that attract and retain skilled migrants, and cross-border innovation initiatives such as joint research programmes, start-up support schemes or cluster cooperation.</li> </ul> <p><b>Cross-cutting aspect</b></p> <ul style="list-style-type: none"> <li>• The strong economic development and cultural integration can be leveraged to support and accelerate the green and digital transitions via coordinated cross-border approaches, for example by facilitating knowledge exchange, joint training programmes, and collaborative innovation projects that combine diverse skills and perspectives, promoting the adoption of sustainable technologies and digital solutions more rapidly across the border region.</li> </ul>

<b>Green dimension</b>	
<b>Key analytical findings</b>	<ul style="list-style-type: none"> <li>• The Alpine setting of the region shapes environmental protection and risks: while air quality is generally high and hydropower widely used, protected areas remain fragmented and cross-border continuity is limited, with common vulnerabilities to floods and landslides;</li> <li>• Energy systems are highly interconnected through hydropower stations and cross-border grids; this reliance on relatively clean energy supports high resource productivity and relatively low waste levels compared to EU averages;</li> <li>• Despite strong interlinkages, governance and performance differ: Switzerland consistently leads in environmental quality and resource efficiency, while Austria shows more volatility, underscoring uneven national approaches within a shared Alpine landscape.</li> </ul>
<b>Policy options</b>	<p><b>Climate risks and resilience related aspects</b></p> <ul style="list-style-type: none"> <li>• A focus could be on the resilience across the Alpine landscape by addressing cross-border risk management and ecological corridor planning in response to common vulnerabilities to floods and landslides, as well as the fragmentation of protected areas;</li> <li>• Existing cross-border governance structures around the Lake Constance (e.g., the International Lake Constance Conference) can be leveraged as a model for lessons learned on institutionalising environmental cooperation. Insights from the conference could inform the design of joint management structures, collaborative monitoring schemes, and coordinated policy frameworks for cross-border natural resources.</li> </ul> <p><b>Cross-cutting aspects</b></p> <ul style="list-style-type: none"> <li>• The transformation of fragmented protected areas into integrated cross-border park and landscape management frameworks, ensuring coordinated governance of common ecological assets beyond administrative boundaries;</li> <li>• The hydropower infrastructure and differing trends in waste generation can be used as entry points for future-oriented cross-border energy governance and circular-economy initiatives that enhance resource efficiency, reduce environmental pressures and foster innovation, while taking into account existing regulatory frameworks to ensure alignment and compliance across borders.</li> </ul>

<b>Socio-economic dimension</b>	
<b>Key analytical findings</b>	<ul style="list-style-type: none"> <li>• Strong social and cultural integration is supported by a shared German language, high cross-border social interaction, and low cultural barriers, though linguistic diversity in Graubünden introduces some complexity;</li> <li>• Tourism plays a major role in shaping the region's economy and spatial development, generating income and employment but also causing seasonal pressures, land-use conflicts, and cross-border impacts on housing and labour markets, such as rising rental prices and seasonal accommodation shortages, increased demand for temporary or low-wage labour, and pressures on local workforce availability;</li> <li>• Accessibility to services is uneven due to Alpine geography: German areas generally have better service provision, while Swiss and Austrian valleys face longer travel times, linking social integration, tourism, and spatial constraints.</li> </ul>
<b>Policy options</b>	<p><b>Cross-cutting aspects</b></p> <ul style="list-style-type: none"> <li>• The strong socio-cultural integration can be leveraged to strengthen cross-border cooperation in labour markets and housing policies through targeted knowledge exchange and joint initiatives. At the regional level, this could include coordinated labour market analyses, cross-border skills-matching platforms, joint training and upskilling programmes, and collaborative housing strategies such as shared planning frameworks or affordable housing schemes to manage workforce accommodation needs;</li> <li>• The high social connectivity could be used as a foundation for addressing common challenges related to land-use conflicts through coordinated cross-border dialogue, with a focus on conflicts that have the largest environmental, economic, or social consequences. Differentiated approaches could be applied depending on the context, for example, prioritising conservation measures in Alpine tourism and protected areas, while managing urban expansion through coordinated planning and development controls.</li> </ul>

<b>Border security and safety dimension</b>	
<b>Key analytical findings</b>	<ul style="list-style-type: none"> <li>Cross-border flows of people and goods are frequent, but temporary border controls, most often reintroduced by Germany, have repeatedly disrupted mobility between 2006 and 2025;</li> <li>Controls were triggered by security concerns, migration pressures, political events, and health crises, while Liechtenstein maintained frictionless mobility due to its small size and dependence on open borders;</li> <li>These asymmetric interruptions affect daily commuting, transport and cross-border trust.</li> </ul>
<b>Policy options</b>	<p><b>Cross-cutting aspects</b></p> <ul style="list-style-type: none"> <li>The impacts of border controls on cross-border commuting and logistics can be mitigated through coordinated and institutionalised cross-border policy dialogue;</li> <li>The mitigation of border control effects can form part of cross-border cooperation projects in various sectors. Economic networks, transport infrastructure initiatives and tourism-related actions can incorporate considerations related to the impacts of border controls.</li> </ul>

<b>Governance dimension</b>	
<b>Key analytical findings</b>	<ul style="list-style-type: none"> <li>The border area has a long-standing, highly institutionalised system of cross-border cooperation, supported by Euroregions, EGTCs, councils, and associations, reflecting strong functional ties and shared Alpine challenges;</li> <li>Cross-border public services, transport networks, tourism, education, and environmental initiatives demonstrate practical integration, with key hubs around Lake Constance and along the Alpine region;</li> <li>Institutional advice centres and Interreg activities strengthen networks, innovation, and governance, though cooperation intensity varies spatially, with western areas showing denser project networks than eastern regions.</li> </ul>

Governance dimension	
<b>Policy options</b>	<p><b>Cross-cutting aspects</b></p> <ul style="list-style-type: none"> <li>• The governance within Euroregions, EGTCs and long-standing cooperation structures can be addressed to move towards integrated, cross-sectoral solutions through coordinated strategy development;</li> <li>• Cross-border public services, transport networks, tourism, education, and environmental initiatives could be expanded to ensure practical integration not only in key hubs around Lake Constance, but also in peripheral and rural areas, so that these regions benefit from improved access and are not left underserved;</li> <li>• Cooperation platforms around Lake Constance and the Alpine region could strategically address cross-sector coordination, such as housing, mobility, energy and environmental risks, in an integrated manner via shared knowledge and joint initiatives.</li> </ul>



**ESPON**



Co-funded by  
the European Union  
Interreg

[espon.eu](http://espon.eu)



**ESPON 2030**

ESPON EGTC  
11 Avenue John F. Kennedy  
L-1855 Luxembourg  
Grand Duchy of Luxembourg  
Phone: +352 20 600 280  
Email: [info@espon.eu](mailto:info@espon.eu)  
[www.espon.eu](http://www.espon.eu)

The ESPON EGTC is the Single Beneficiary of the ESPON 2030 Cooperation Programme. The Single Operation within the programme is implemented by the ESPON EGTC and co-financed by the European Regional Development Fund, the EU Member States and the Partner States, Iceland, Liechtenstein, Norway, and Switzerland.

**Disclaimer**

This delivery does not necessarily reflect the opinion of the members of the ESPON 2030 Monitoring Committee.